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## Original Department.

### The Physiological Action and Therapeutic Uses of Alcoholic Stimulants.

By E. P. Hurd, M. D., Newburyport, Mass.

THE prevalence of the appetite impelling to the use of strong drink, has been remarked by all writers who have considered the alcohol question from a scientific standpoint. It has been argued from the universality of this appetite, which has been a characteristic of all nations in all ages, that the instinct which prompts men to indulgence in alcoholic stimulants cannot be wholly wrong, and the appeal has been made to other passions, existing as integral parts of human nature, which no one ever claims to be abnormal, but the improper or excessive gratification of which is fraught with disaster and ruin.

"Man's great passions are coeval with the vital breath he draws,
Older than all codes of custom, all religions and all laws;
Before prudence was, or justice, they were proved and justified;
We may shame them and deny them, their dominion will abide."

The only kinds of alcoholic liquors known to the ancients were those obtained by the natural process of fermentation; the fermented juice of the grape was probably the oldest, though intoxicating drinks made from milk, rice, malt, millet seed, apples, pears and other fruits were in use among various barbarian nations.

The art of distilling is of modern discovery, originating in China, where it was applied to the obtaining of alcohol from fermented rice. Marcus Græcus, in the 13th century, first describes the distillation of

alcohol from strong wines. In the course of the next century, the art of extracting alcohol from infusions of cereals came into vogue. In 1595, by an Act of the English Parliament, the production of alcohol from wheat and barley was prohibited under heavy penalties. Somewhat later, means were found for obtaining alcoholic preparations by distilling the juice of the sugar cane, molasses, the cocoa-nut and rice, and in the eighteenth century various fruits and especially potatoes were prostituted to the same purpose. In 1796, Richter discovered the means of rendering alcohol absolutely pure.*

Alcohol is a product of vinous fermentation which consists in the decomposition of sugar into carbonic acid and alcohol, and is obtained in a diluted state from any liquid in which this fermentation has taken place. In France it is extracted from wine, and is called brandy (*brannt wine*, burnt wine); from fermented infusions of wheat, rye, barley, or potatoes whiskey is obtained, which when rectified with turpentine is called gin (when rectified with juniper it constitutes Holland gin); rum is the product of the distillation of molasses; *ratafia* is extracted from sugar cane juice; arrack from rice and the cocoa nut; *Kirchwasser*, from crushed cherries; *Slivovitz* (a beverage in use in Austria, Hungary and Poland) from plums. These forms of ardent spirits contain different proportions of alcohol, varying from 20 to 55 per cent.; brandy, rum, gin and whiskey contain from 50 to 55 per cent. of pure alcohol. The peculiar taste of the several liquors is due to œnanthic ether, fusil oil, and various ethereal oils, in the case of Holland gin, to the oil of juniper.† The effect of alcohol in all these intoxicating beverages is somewhat modified by the other ingredients which they contain, and the greater the dilution with water, the less deleterious the alcohol in these beverages. Wine, besides water and alcohol, contains carbonic, acetic, tannic, tartaric and malic acids, cream of tartar, chlorides of sodium, potassium, etc., coloring matter, grape sugar, œnanthic ether. Ale and porter contains alcohol from four to six per cent., water, sugar, gum, extractive and bitter matter, fatty and glutinous matters, lactic acid, carbonic acid and salts. There is no doubt that the salts, acids, ethereal elements and sugars which the fermented liquors contain do moderate the stimulus produced by the alcohol, and ensure a more rapid discharge of these substances from the system than would otherwise take place.

An important distinction should be made by temperance advocates between fermented and distilled liquors, the former being a natural product and containing little alcohol, the latter being an artificial product, with a high percentage of alcohol,—too much for safe use as a beverage,—and rapidly making inebriates of people.‡

The treatment of the physiological aspect of the subject resolves itself into the consideration of the question: is alcohol a food, a medicine or a poison? All are agreed that alcohol in excess is a poison, by this word signifying an agent, which, when introduced into the economy, produces noxious results on the fluids or solids, or both, of the organism. Excess may be constituted by quantity—too much of the milder liquors being used—or by quality, *i. e.* by employing as a beverage too concentrated a spirit. What then are the effects of alcohol, when an excess is ingested? Taken in its purity, it at once destroys all life. Scarcely any substance is more noxious. It arrests those chemical changes, on which life depends. It coagulates albumen, and corrugates the tissues by taking from them water. Applied in the form of proof spirit to the exposed brains of animals it induces paralysis; applied to the heart, it stops its pulsations. Fish soon lose their activity in water containing a very small percentage of alcohol.

Among the morbid conditions resulting from the habitual use of too much alcohol, we have inflammations of the stomach, kidneys, brain, liver, with indurations, thickenings and other degenerations of these organs. The phenomena of intoxication are owing to the paralyzing action of alcohol on the nervous system, this part of the organism being especially susceptible to the poison. There is not a single nervous or mental disorder that does not find in alcohol its most fruitful cause. Wilson and Lettsom, more than half a century ago, described in vivid colors the symptoms and pathology of drunkenness, and modern observers can add but little to the faithfulness of the representation. He who will emphasize only the dark side of the picture, will never be anything but a teetotaler. The appetite for alcoholic spirits is so hard to regulate! It is so easy to justify as moderation what to you is really excess! The pilot sits at the helm and thinks that he is master of the frail bark, and that she is being guided safely into port, and does not know that his craft is even now drifting along at the mercy of treacherous winds and mad waves, which are bearing him far out to sea, away from family, friends, humanity, to darkness, desolation and ruin.

What shall be said of the moderate use of alcoholic stimulants? Is it safe to use alcohol at all, and are there conditions and circumstances in which alcohol is good as food or medicine, or both? Here an appeal must be made to the historical data and experimental investigations requisite for a proper solution of the question. Experimental inquiries as to the rôle of alcohol in the human system date from the investigations of Dr. Percy, in 1829. His experiments were made chiefly on dogs. After dosing these animals with wine, whisky, etc., he obtained alcohol from their blood and brains, as proved by its odor, inflammability, and ability to dissolve camphor. He showed that alcohol has a remarkable affinity for the brain, and that when absorbed from the stomach it kills by paralyzing the nervous centers. These experiments, going to show that alcohol is a poison, and that it passes as alcohol to the tissues for which it has an affinity, were followed by the experiments of Bouchardat and Sandras, who, in 1847, published a treatise on the digestion of alcoholic stimulants and their rôle in nutrition. They claimed to have detected in the blood of animals on which they experimented with alcoholic liquors, certain derivatives of alcohol, such as aldehyde, acetic acid, carbonic acid, which would indicate that alcohol, after being ingested, undergoes gradual oxidation. Their con-

*Stillé, Therapeutics and Materia Medica, Vol. I., p. 626.

†Stillé Loc. Cit., p. 626. The entire article of Stillé is commended as a masterly and temperate view of the question from a medical standpoint.

‡This is substantially the view taken by the late Dr. Willard Parker, in the Christian Union, March 7th, "Whenever you put sugar and water together under suitable conditions you will have alcoholic fermentation, and this may even take place to some extent, in our stomachs when starchy or saccharine articles of diet are eaten. Distilled liquors are an 'artificial production,' 'the work of man or the devil, or both.'"

clusions were that alcohol is ordinarily burned off by respiration, so as to form carbonic acid and water; Ducheck arrived at similar results. Lehmann and Liebig maintained the same doctrine, classing alcohol among the heat-producing foods, sugar, starch and fat. Liebig claimed that alcohol stands high as respiratory food, and that its use enables us to dispense with sugar and fat in our dietary. "If you don't drink beer or wine," he said, "you must supply its place with more bread or pudding." The teaching of these chemists may be syllogized thus: food is force, alcohol is force, therefore alcohol is food. Food, according to Liebig, has two offices: first, to repair waste; second, to supply animal heat; and, under both of these heads, alcohol is a generator of force. The daily consumption of respiratory matter is five times that of plastic or tissue-making matter. All food, says Liebig, is burned in the organism, which consumes for the production of heat and force its own tissues, and the fuel which never becomes tissue. Alcohol, by becoming tissue fuel, prevents tissue waste. Dr. Carpenter attacked these views of Liebig in his masterly prize essay on the "Use and Abuse of Alcoholic Liquors," published in 1850, and Dr. Carpenter's book was reviewed by George Henry Lewes in the Westminster Review for July, 1855. The article of Lewes was entitled "The Physiological Errors of Teetotalism," and made considerable stir. Lewes does nothing but popularize the teachings of Liebig. He emphasizes especially the fact that any substance is a food or a poison according as you take it in moderation or excess. Oxygen in excess is as terrible a poison as strychnine, and so is heat. An excess of light destroys the eye, and an excess of mutton or plum-pudding the stomach. Alcohol in moderation does good by saving the muscular and nervous tissues from disintegration; if it does not make new blood, it obviates the necessity for new blood. By its oxidation it gives the same amount of heat and energy which the tissues, if burned, would yield by their oxidation.

Lallemand, Duroy, and Perrin, of the Imperial School of Medicine, Paris, attacked the doctrine of Liebig, and claimed as the result of elaborate experiments of theirs that alcohol is in no sense a food; that when taken into the system it does not undergo oxidation or decomposition; that all of the alcohol ingested passes out of the economy by the breath, perspiration, urine, etc., unchanged. In their experiments they made use of the potassium-bichromate test; a red solution of this reagent in sulphuric acid, which is turned to an emerald green by alcohol. By this test they found alcohol in the sweat, urine, bile, etc., of animals to which they had given spirituous liquors. They detected it also in the blood, brains, liver and kidneys; they found none of the derivatives of alcohol, such as aldehyde, or acetic acid. Their conclusion was that in every instance alcohol, like chloroform, is separated from the blood by the excretory organs unchanged. Like choroform, they said, alcohol has an elective affinity for the brain and liver, and no sooner is it received into the circulation than the system begins an energetic series of operations for its removal. The organs of excretion continue to eliminate it until the blood is entirely freed from the poison. They affirmed that there is no more evidence that alcohol is utilized in the body than that ether and chloroform are utilized.*

*In the Semaine Medicale, April 24th, 1884, appears a statement from Prof. Perrin which will be of interest here, as he still adheres to conclusions formulated in 1860: "I do not agree with those who think that alcohol is a food, which undergoes transformation in the organism by a series of successive oxidations. With Lallemand and Duroy I showed twenty-five years ago that this was a mistake. In a series of experiments made in common, we analyzed the blood of dogs anaesthetisized by alcohol, and we found 5½ parts of alcohol in every 700 of that liquid. Distillation of the nervous system gave us a larger proportion still, namely 5 parts to every 440. The urine contained 2½ per cent. alcohol.

Alcohol was also found unchanged in the expired air of animals poisoned by it. To determine this I used the chromic acid test; I well know that the reaction obtained by it is not peculiar to alcohol, as a great many organic substances produce the same coloration, but I guarded against this source of fallacy by counter-tests.

It has been objected that our experiments were concerned with animals dosed with alcohol in excess, and that every substance taken in these conditions, whatever may be its nature, is rejected from the system without undergoing alteration. But this objection, admissible as regards a certain number of experiments, is inadmissible as regards the greater part of those in which the alcohol was not given in absolutely toxic quantities, The results have always been the same, even when it has been a simple affair of the ingestion by a healthy person of a wineglassful of brandy, or a bottle of wine containing 9 per cent. of alcohol. Our experiments have, moreover, proved that elimination of alcohol by the lungs continues during about eight hours, while excretion by the urine goes on for fourteen hours. Comparison of the various liquids and solids of the economy goes to show that alcohol does not attach itself with equal readiness to them all. The liver fixes more than the blood, and the nervous system more than the liver.

Certain observers who have acknowledged the exactitude of our experiments have raised the objection that the quantity of alcohol recovered by us was insignificant, and that our method of reasoning, true as pertaining to a part of the liquid ingested, is erroneous if applied to the totality of the alcohol taken.

I reply to this that if a part of the alcohol is transformed in the economy, we ought to find the products resulting from such transformation in the excretions of the organism. We ought certainly to detect aldehyde in the air of expiration. But our researches in this direction, by the aid of ammonio-nitrate of silver, the test *par excellence* of aldehyde, have been entirely negative. I am aware that the breath of inebriates has a quite peculiar odor which reminds one of the odor of aldehyde, but this odor results from the transformation of alcohol in the stomach, and not from any alcohol that has undergone absorption, whose products would immediately be eliminated by the lungs.

It has been told us that aldehyde is an unstable product; our difficulty in finding it may have been due to its acidification and its combination with the alkalies of the blood. Our response to this objection is that we have given aldehyde in its purity to animals, and have had no difficulty in proving its presence in the expired air during elimination. Similar investigations have been made *apropos* of acetic and oxalic acids, and always with negative results after administration of alcohol. As for carbonic acid, another product of the transformation of alcohol, it is well-known that this gas does not exist in augmented quantity in the expired air of spirit drinkers, but in diminished proportion. For six months I submitted myself alternately to an aqueous regimen, and to an alcoholic regimen, and invariably I excreted less carbonic acid when I drank alcoho than when I drank simply water. This diminution of carbonic acid was even proportioned to the richness in alcohol of the beverages used. It seems to me demonstrated that alcohol, entering into relation with the nervous system, acts on the calorigenous centres, and diminishes the general nutritive movements, thus lowering the temperature.

This property of alcohol explains the utility of alcoholic stimulants in therapeutics; they do not nourish, but by retarding the operations of nutrition, they constitute a *sparing agency* (*agent d épargne*), which in pyrexias, septicæmias, etc., opposes powerfully the denutrition of the tissues, and the exaggerated elevation of the temperature." (Discussion before the Academy of Medicine, Séance 22d April.)

These experiments and conclusions had a profound influence; in 1861 they led the Westminister Review to retract its anti-total abstinence article; the experiments were repeated by Duprè and Edward Smith. The latter, while admitting the elimination of alcohol after ingestion unchanged, yet affirms that only a part of the alcohol so ingested passes out of the system undecomposed; and he shows how herculean and impossible a task it would be to collect all the excretions of twenty-four hours after ingestion of some alcoholic beverage, extracting all the alcohol from these excretions, and showing that the sum total of the alcohol so obtained, was equal, or nearly so, to the amount ingested.*

The most important contribution of the past twenty years, to our knowledge of the physiological effects of alcohol, is the work of the late Dr. Anstie, on "Stimulants and Narcotics," published in 1864. Anstie's investigations clearly show that alcohol is a food, medicine or poison, according to the circumstances under which it is taken, and according to the quantity taken. The effect of a small quantity he calls true stimulation, and urges that this is often beneficial, and comparable to the effect of food; a large dose produces narcotism, and is always injurious, except when that narcotism is required for medicinal effect. A small stimulant dose is physiological, a large narcotic dose is pathological, and between the two there is a definite poison line, varying with each individual case. He denies that true stimulation is ever followed by reactive depression. True stimulation, whether produced by the oxygen we breathe, or by the wine we drink, facilitates nutrition, and hence supports life. All food stimulates, and every real stimulant nourishes. Such, in substance, is Anstie's doctrine.†

One of the most recent experimenters is Binz, of Germany. His articles may be found in Braithwaite's Retrospect for 1876. He has patiently worked at the same problem as the French chemists, with results similar to those obtained by Dr. Anstie. His experiments were made with pure alcohol diluted with water. The first result which he obtained, in answer to the question, "What becomes of alcohol in the human system?" is that a small quantity, namely from two to three tablespoonfuls is entirely consumed in the body. In none of the excretions did it reappear, nor was there a trace of alcohol in the breath. He declares that it is only after the larger or narcotic dose is taken that nature resents it as an intruder; and this she does when an excess of even the simple aliments is taken. Even sugar and salt pass away freely in the excretions, when they have been taken in excess. The smell of the breath is owing to ether or fusil oil in the alcohol. Dr. Binz's conclusions are that alcohol, when taken well diluted, in small quantities, not more than an ounce and a half or two ounces in the twenty-four hours, undergoes digestion, being resolved into carbonic acid and water. It is not a true food in the sense of supplying both heat and substance, but it supplies heat directly. In undergoing oxidation in the system it gives off about as much heat as if it were burned in a spirit lamp. He agrees with Liebig that alcohol slows or lessens the oxidation of the tissues, and to a certain extent replaces other food; by stimulating the digestion it increases the total amount of assimilation and thus favors plethora or obesity. By thus promoting excessive nutrition, it is often an evil to persons in health. The moderate drinker is apt to suffer from over-nutrition, makes too much blood, and is liable to be carried off by acute disease. In fact, Dr. Binz does not hesitate to declare that alcohol in health is unnecessary, and likely to be injurious.

*Foods, by Edward Smith, page 420.

†Anstie on Stimulants and Narcotics, London, 1864. Anstie's argument has been popularized by John Fiske, in a little book, entitled "Tobacco and Alcohol, published in 1869.

RECENT EXPERIMENTS OF D. BEAUMETZ.

Allusion should here be made to a process of experimentation on the toxic effects of alcohol now being conducted by my friend, Dr. Dujardin-Beaumetz, of Hôpital Cochin, Paris, France.

The animals on which these experiments have been performed are dogs and swine. Dujardin-Beaumetz has been assisted in these experiments by Dr. Audigé. They employ chiefly the hypodermic method, and call minimum toxic dose that quantity of pure alcohol which by kilogramme of the weight of the body of the animal, is necessary to cause death in the space of twenty-four to thirty-six hours, with gradual and permanent fall of the temperature. By pure alcohol is understood alcohol of 100° in the scale of Gay Lussac.

This method has enabled them to study the toxic effects of the different alcohols. Quite a stout octavo volume, published in 1879, gives the details of over three hundred experiments. (Réchérches experimentales sus la puissance toxiqué des Alcools, Paris, O. Doin).

The following conclusions result from these researches:

The least toxic of the alcohols is the ethyl alcohol from vinous fermentation. The most toxic is the amyl alcohol, (potato spirit, fusel oil).

As for the toxic phenomena determined by the alcohols, they may be divided into three periods: A period of ebriety, or excitation, a period of resolution and a period of collapse. These periods undergo modifications depending on (1) the nature of the alcohol employed; (2) the dose administered; (3) the resistance of the subject.

With the alcohols obtained by fermentation, the three periods of acute intoxication succeed each other in a regular order, but in proportion as you depart from the ethyl series, their character is more accentuated, their evolution more rapid, and you see certain convulsive phenomena appear.

With methyl alcohol (wood spirits) the period of excitation is more intense, resolution, collapsus, and the toxic symptoms which accompany them arrive more rapidly at their maximum, but, in case the dose is not sufficient to kill, the phenomena disappear more promptly.

With œnanthylic and caprylic alcohols the periods of intoxication do not present the same regularity, and convulsions occur. Glycerine causes an increase, rather than a fall of temperature.

In the case of all animals which have died from acute poisoning by alcohol the necropsy discloses lesions of the respiratory and circulatory apparatus, of the nervous system, and of the kidneys. As for the digestive apparatus, the lesions on the part of the gastric mucous membrane are inconspicuous when the alcohol is introduced by the hypodermic method, but when the poison is administered by mouth, the mucous membrane of the stomach is invariably found softened, and the more concentrated the alcohol, the greater the softening. The intestine undergoes the same alteration; it is found softened, and of a reddish black color; punctiform hæmorrhages are produced, even when the alcohol is injected under the skin. (elimination of alcohol by the intestinal glands).

The liver is more profoundly altered than any other gland. It is congested, softened and friable. The spleen is engorged with blood and softened. As for the respiratory and circulatory lesions, they are characterized by a profound alteration of the blood, which becomes dark, and forms in the heart clots in considerable quantity. The lungs are congested and contain apoplectic foci. The kidneys are injected and present hæmorrhagic extravasations, especially when fusel oil (potato spirit) is used.

Acute alcoholic poisoning in the human subject, is attended with similar symptoms, and presents similar post mortem lesions.

*Chronic Alcoholic Poisoning.*—Administered in fractional and daily doses, alcohol determines a congeries of symptoms to which the name alcoholism has been given. In this department of study experimental researches are not yet completed, and it

is more especially on facts observed in the human subject that all descriptions of chronic alcoholism have been based.

It was in 1879 that Dujardin-Beaumetz and Audigé commenced in the abattoirs of Grenelle their researches on slow intoxication by the alcohols. They used hogs as the subjects of their experiments, giving these animals daily quantities of the different commercial alcohols, which varied from one gramme to three grammes by kilogramme of weight. From a letter to me from Dr. Beaumetz, bearing date March 18th, 1882, I learned that after two years dosing with alcohol, three hogs had succumbed to the poison. When the quantity is exceeded of five grammes to the kilogramme, the animal emaciates rapidly, refuses to eat and soon dies.

Among the post mortem changes, the lesions of chronic gastritis have been noted, also fatty changes in the kidneys. In the case of two of these animals, the necropsy revealed atheromatous degeneration of the aorta. In no instance was cirrhosis of the liver observed, or any of the chronic interstitial diseases. Beaumetz explains the absence of hepatic cirrhosis by the fact that the fibrous web-work of the hog's liver is thicker and more resisting than that of man, and that in consequence it is more difficult to choke out the glandular elements, (Semaine Medicale, April 24th, 1884).

The most marked manifestation of chronic intoxication in these animals is a profound prolonged somnolence without any period of excitation. There is also a trembling and a weakness in the limbs. It is worthy of special note that the symptoms of intoxication are much less pronounced when ethyl alcohol is used, and that swine will support for a long time, apparently with impunity, moderate quantities, administered regularly every day, of pure spirits (wine, beer, rum, whiskey, etc.), containing only ethyl alcohol. Many of the animals first experimented on are now living and in good condition, though dosed with several ounces of ethyl spirits daily.

In experiments undertaken to prove the combustion or non-combustion of alcohol in the economy, these physiologists were positive in having found aldehyde in the viscera of men and animals poisoned by ethyl alcohol, and had even obtained in one of their experimentations, the reduction on a mirror of silver nitrate which is one of the best tests of ethyl-aldehyde, but a more attentive examination of the facts has shown them that the aldehyde which they found may have come from its presence in the normal state in a great number of alcoholic liquors. Therefore, nothing definite has been determined by these experiments as to the formation of aldehyde out of alcohol in the economy.

Recently Jaillet has shown that in passing a current of oxygen over blood containing alcohol the latter is transformed into acetic acid. These experiments demonstrating the acetification of alcohol in the circulating blood, and the destruction of the acetates formed into water and carbonic acid, have an important bearing on the prevailing theory as to the refrigerant and antipyretic action of alcohol on the organism. Jaillet, after having shown that the oxyhæmoglobin of the blood is continually undergoing decomposition in the presence of oxidizable bodies, and yielding up to them all its combined oxygen, has made it plain that the blood globule impregnated with alcohol transforms the latter into acetic acid during the phenomenon of hæmatosis. In other words the blood globule, when impregnated with the toxic spirit, has lost the property of transforming all its hæmoglobin into oxyhæmoglobin, for the oxygen of respiration unites at the same time with the alcohol,and the hæmoglobin of the corpuscles. It suffices in fact to pass a current of oxygen into a certain quantity of blood which has been dosed with alcohol; the blood will presently give the reactions of acetic acid when the proper tests are employed.

We are now in position to explain the refrigeration, and other phenomena observed in alcoholic poisoning. We know in fact that an animal intoxicated by alcohol gradually undergoes depression of temperature till death ensues. At the necropsy we observe hyperæmia of all the organs, pulmonary apoplexy and black blood in the vessels. When considerable quantities of alcohol are administered, the temperature is always observed to all appreciably, and in the experiments of Dujardin-Beaumetz and Audigé, it was remarked that under the influence of heroic doses of alcohol the temperature fell from 15 to 18 degrees.

(1.) The gradual lowering of the temperature is owing to interruption to the phenomenon of hæmatosis occasioned by the alcohol. Since the blood globule no longer fixes a sufficient quantity of oxygen, it follows naturally that the combustions in the recesses of the tissues are incomplete; animal colorification is imperfect; the result of this incomplete combustion is the accumulation of fatty tissue in inebriates, and the presence in excess of fat granules in the serum and corpuscles of the blood.

(2.) The black blood contained in the vessels is the demonstration of the respiratory embarrassment; less oxygen being fixed by the globule, less carbonic acid is exhaled. Hence the latter gas accumulates in the blood: there is also increased production of carbonic acid. The acetic acid incessantly formed from the breaking up of the alcohol decomposes the alkaline carbonates in the blood, setting free carbonic acid and forming acetates, and these latter again undergo transformation into water and alkaline carbonates. In these conditions,death is a veritable poisoning by carbonic acid, which determines a progressive slowing of respiration and circulation, and blood stasis in all the organs.*

### HYGIENIC AND MEDICINAL USES OF ALCOHOL.

Having briefly set forth the present status of science with regard to the rôle of alcohol in the human system, I come to the hygienic and medicinal uses of alcohol. Starting with Dr. Anstie's definition of a stimulant as an agent which, taken in proper quantities, facilitates nutrition, and is not followed by recoil, I am obliged to point out the fallacy of a common argument, so well put by my friend, James Parton, in his popular tract: "Will the Coming Man Drink Wine?" Mr. Parton, imbued with the popular misconception that a stimulant can add nothing to the sum of vital strength, but must detract from the reserve fund of to-morrow, draws this inference as to the real office of alcohol in our modern life: "It enables us to violate the laws of nature without immediate suffering and speedy destruction." I must proclaim my dissent from this doctrine. There is no such thing as borrowing at 4 o'clock the strength of 5 o'clock; the strength of to-morrow is non-existent till to-morrow comes. Mr. Parton's fever patient ought to be weaker at 5 o'clock by just the same amount that he is stronger at 4 o'clock, but this is not the case, for he is stronger at four, and he is stronger at five, he is stronger to-morrow, and he convalesces more rapidly than if he had not taken wine. Those who have carefully watched the effects of alcohol in states of debility and exhaustion, will agree that there is a constant reënforcement under the stimulus, not a borrowing of to-morrow's strength with corresponding enfeeblement to-morrow in consequence. But much mischief has been done in the practice of medicine by not knowing or forgetting that over-stimulation is narcosis, is paralysis. Failing to discriminate between the stimulant and narcotic effect, between that heightening of nutrition and function which accompanies moderation, and that weakening of nutrition and function which accompanies excess, physicians have often erred in prescribing alcoholic liquors for the sick.† To obtain the fullest physiological stimulant effect, they have

*(Dujardin-Beaumetz and Audigé, Recherches sur la puissance toxique des alcools, O. Doin, Paris, 1879.—Dujardin-Beaumetz, art., *Alcool* in Dictionairé de Therapeutique—Boston Medical and Surg. Journal, Nov. 23, 1882, (translation by E. P. Hurd, of a lecture by Dujardin-Beaumetz). Jaillet, On the Transformation of Alcohol in the Organism, in Bulletin General de Therapeutique, August 15th, 1881).

†In my experience I have more than once seen harm from the lavish administration of alcoholic stimulants. I have seen patients whose enfeebled organisms were struggling under one poison (the typhoid virus) compelled to submit to further (benevolently intended) poisoning. It is said that there is a last straw that breaks the camel's back.

In my judgment we seldom gain anything, even though our patient be suffering extreme prostration—from hemorrhage, severe burns or scalds, shock of a railroad accident, septicæmia, typhoid fever, etc.—by exceeding the quantity of two tablespoonfuls an hour of good old rum, whiskey or brandy. Generally, I think, we get better results from half that quantity. It is quite a common thing to carry patients through moderate attacks of continued fever, pneumonia, etc., without any alcohol at all.

prescribed quantities which must poison the blood, overwhelm the vital powers and paralyze function. It is true that in cases of blood-poisoning and extreme prostration quantities are often physiological which in health would be deleterious and even fatal, yet there is great danger, even in the exhaustion of disease, that the poison-line may be crossed.*

Is the habitual moderate use of alcoholic stimulants in health injurious? If we look to the example of the Germans who are characteristically a wine-drinking and beer-drinking race, we should answer the question in the negative.

The effects of these beverages are often modified by ingredients other than alcohol with which they are sophisticated. The use of absinthe by the French in their spirituous liquors produces a very peculiar kind of intoxication and nervous prostration. The adulterations of wines and malt liquors are most startling, and from an analysis of many of these sophisticated liquors it might be inferred that even the very moderate use of them would be baneful. There is reason to believe that our American ales are to a large extent hastily manufactured articles, got up for the trade on economical principles, well dosed with fusil oil, glycerine, bisulphite of sodium, "porterine" and other noxious ingredients, and containing enough of them to ensure one headache and one sleepless night for every glass taken. The free use of such "stock" ales is likely to be attended with drunkenness of the most deplorable kind. On the contrary, good ale, that has been a year or two working, like some of our foreign ales, in the manufacture of which from two to three bushels of hops and as much malt to the barrel are used, containing from five to eight per cent. alcohol is as unobjectionable as any alcoholic liquor.

There are certain extraordinary occasions of human experience when the use of alcoholic liquors is demanded. First, when there is demand for unusual exertion. Nervo-muscular energy must be sustained under some severe temporary effort. But persons whose habits are sedentary, and whose work is brain-work, should use these stimulants with great caution. Coffee is better. The glass of wine or ale makes the brain-worker heavy or "boozy," and he is unfit for labor till he has had a short nap. The miner, exposed to cold and damp during a time of bodily fatigue, is the better for an alcoholic cordial, and instances might be multiplied of a similar kind

Secondly, where there is lack of adequate food. Mr. Parton's overland traveler who could obtain nothing to eat but "grease and saleratus" managed to get along with the help of plenty of rum, though Horace Greeley stood the ordeal without any stimulant. Dr. Carpenter relates the instance of the mutineers of the Bounty, who would have starved but for the little rum they had saved.

Thirdly, where there is lack of constitutional vigor there may be habitually want of appetite and feebleness of digestion, or it may be impossible to arouse nervo-muscular tone to the working point, without a little alcoholic stimulant, the absence of which is attended with languor and debility. Sir Henry Thompson, in the Contemporary Review, declares himself to be one of this class. He can command his mental and physical powers better with a little wine than without it, and his positive affirmation, 'I know that it is so,' comes to us with all the authority of an elementary fact of consciousness. We must discuss this question without heat, with candor and *sang froid*. Such cases are, it must be admitted, anomalous, and are the result of parental or ancestral inheritance. The fathers were 'hard drinkers' and the sons are neuropathic—have inherited unstable, nervous systems, which do not respond well to the ordinary food stimuli.* The late Dr. Clark of Dublin, who lived to an advanced age, was, according to Dr. Carpenter, an instance.

THERAPEUTIC APPLICATIONS.

The therapeutic applications of alcohol date from the remotest antiquity. Hippocrates, Galen, Pliny, and other ancient writers speak of the medical uses of wine, which was employed externally and internally in a great variety of morbid conditions. The Arabs and Chinese are said to have used distilled liquors at a very early date, as medicine. For nearly three hundred years after the art of distilling became known in Europe, stringent attempts were made by governments, to restrict the sale and use of "high wines," as they were called, to medical purposes.

Alcohol is employed in therapeutics externally and internally.

Locally applied, alcohol has the following properties: It coagulates albumen, is a violent irritant, even caustic when concentrated, and prevents fermentation and putridity. These properties render alcoholic lotions valuable adjuncts in the healing of wounds and ill-conditioned ulcers, especially when healthy cicatrization and repair are hindred by the presence of micro-organisms, inducing septic complications. The coagulating properties of alcohol have been utilized in the treatment of hydrocele, ascites, pleurisy with effusion, ovarian cysts, etc., the effusion being first drained off by tapping, and a spirituous liquid injected.

The internal uses of alcohol are innumerable.† The

* Dr. R B. Todd, author of several medical treatises which are classical, also of a popular work "On the Treatment of Acute Diseases," is an example of a therapeutist who habitually gave his patients too much alcohol. A bottle of brandy a day to a pneumonic patient whose case presented little gravity was not an exceptional prescription with him. His extreme views have found few partisans in this country, the consensus of medical opinion being in favor of a frugal administration of alcoholic stimulants in acute diseases.

* One of my patrons is an example of the kind. He affirms his inability to do any effective work w thout a little alcoholic stimulus every day with his dinner. What admirably answers the purpose is half a tumbler of old cider. Without this dinner tonic there is languor, lassitude and depression all the rest of the day. With his glass of fermented apple juice he is cheerful, vigorous and "quite himself." For years he has indulged in this dinner beverage; the appetite for stimulants has not grown; he takes no distilled liquors. After a very long acquaintance with this gentleman I am satisfied that the glass of cider (or English ale which sometimes replaces the cider) is the *sine qua non* of a healthy physiological condition in which the powers of body and mind are possessed in their highest efficiency. The grandfather of this gentleman, a pioneer in a new country, "used himself up" clearing forests—dying prematurely; he was also a hard drinker. The father, whom I well knew, was neuropathic and a valetudinarian. He was forever indulging in "bitters" and alcoholic "patent medicines," though a pillar of the temperance cause. The son, inheriting the necessity for the stimulus, has done more wisely than the father.

† The medical profession as a body are not as yet ready to stand by Dr. J. R. Nicho's, of the Journal of Chemistry, in his recent declaration in the Boston Journal "that spirituous liquors are no longer needed either in medicine or in the arts, the progress of science during recent years having caused entirely satisfactory substitutes to be discovered!"

A year and a half ago circulars were addressed to all the fellows of the Massachusetts Medical Society by a prominent member of the National Temperance League, asking them whether they considered spirituous liquors of minimum, medium or maximum utility in medicine, (I remember only the substance, not the language of this appeal), and whether in their opinion efficient substitutes might not be found in other known remedies. As far as I have been able to ascertain, the League has not deemed it worth the while to publish the results of this appeal to the members of the Massachusetts Medical Society.

leading indications as to its employment are derived from the following physiological properties, above enumerated. It retards denutrition, it excites the nervous system, being the most important agent of the tonic medication, and energizes the circulatory and respiratory functions.* It is however only when given in physiological, or stimulant doses that it exercises these effects in a beneficial manner. Valuable as it might seem to be as an antipyretic agent in fevers, this refrigerant action is bought at the expense of an interruption of hæmatosis, a spoiling of the corpuscular elements of the blood, which renders the medication baneful rather than salutary.

In ordinary fevers and in pneumonias of mild type there is little indication for alcoholic stimulants, and if given at all, the quantities prescribed should approximate the amount which would have a physiological stimulant effect in health.

It is, especially in cases of blood-poisoning and in fevers, and pneumonia of an adynamic character, (typhoid fever, typhoid pneumonia,) and in states of prostration generally, that alcoholic medicines prove beneficial. When the system is laboring under the depressing influence of shock, we then see the salutary influence of a little alcohol manifested in a marked manner.

The hypnotic action of alcohol in cases of insomnia, rendering this agent sometimes a real boon to the sleepless neuropath, is the result of narcosis, and is the incipiency of alcoholic paralysis. It is the specific action of alcohol on the brain, allaying every painful consciousness by suspending the sensory glanglia and thus inducing stupor; inhibiting, deranging, and in various ways modifying the action of those higher cortical cells whose supreme function is thought, ideation, memory, reflection. Under this potent stimulus the real world of troubles disappears, and in its place comes an ideal world of grateful visions, or a Lethean stupefaction.

CONCLUSION.

With the social and sociological aspects of this subject, I am not now concerned. It must, for ages to come, be the great problem of society, how to regulate the use of alcoholic stimulants and the passion for strong drink. For now, as ever in the past, the tendency to abuse the fascinating beverage is greater than the tendency to make a good use of it, and frail human nature sadly lacks sagacity and control when any strong appetite makes its demands. But suppress these appetites we cannot, we can only guide and moderate them. In countries where the Mohammedan and Buddhist religions prevail, both of which forbid to the pious the use of intoxicating drinks of any kind, they gratify the innate craving for stimulants by smoking opium and chewing hasheesh. The native East Indian ferments the juice of the cocoanut palm, and obtains from it a sour wine called *calla*, the natives of Ceylon drink immoderately of a miserable liquor fermented from rice, called arrack. The Siberian savage stupefies himself with a poisonous fungus or by swallowing tobacco, and the maguey and the coca were used by the red Indians as intoxicants, before the discovery of America.† Hence it is rational to supply this craving, and it is wise to supply it with some substance that will have the minimum of ill effects. The "coming man" doubtless will prize more stimulants of a higher order, social, æsthetic, intellectual; he will not so recklessly violate nature's laws, knowing that for all such violations there is sure retribution. He will not abuse his own organism, knowing that intemperance and vice entail exquisite suffering on himself and on his offspring. Doubtless, as social conditions improve, there will be less and less of that want of harmony between man and his environment which drives so many to the Lethean bowl. As long as the imperfections of the present social state exist, and humanity remains unfitted to environing conditions, so long evil and misery will continue, and men will seek refuge and solace in strong drink. Increase the sum of human happiness by whatever means; lessen the heavy burdens that humanity has to bear; ameliorate the woes of mankind by removing disease and crime, by a higher physical, moral and intellectual education; make men more patient to bear those evils that are inseparable from their lot; and you will have plucked out the claws and fangs of that dire monster which has so long devastated society; men will become temperate because clearly understanding that abstinence from the habitual use of alcoholic stimulants is a requisite of the highest, completest, happiest life.

*Dujardin-Beaumetz, Art. Alcool in Dictionaire de Therapeutique.

† Medical and Surgical Reporter, June 30th, 1881.

## Atropine and Similar Bodies in General and Special Practice.

By C. W. Tangeman, M. D., Cincinnati, Ohio.*

DURING the past few years numerous experiments have been made for the purpose of determining the physiological action, and the therapeutic value of the list of drugs known as mydriatics. It seems strange, to say the least, that during the past decade, every experimenter makes an effort to obtain an alkaloid of the drug which he is investigating. This is, undoubtedly, desirable in physiological research, but to apply the same remedy therapeutically, the concentrated form, for the general practitioner, is not so good, since even a small quantity becomes dangerous, and can, therefore, not come into general use. We need only refer to the digitaline group to show the large number of compounds, nearly all of them that pharmacology has prepared for us, being very toxic. If by the preparation of these active principles the toxic properties can be recognized and isolated, without altering or destroying the active principle, as in Bonjean's ergotin, much is gained, since the remedy can be applied with impunity.

Sadenburg, in his experiments, comes to the conclusion that hyoscyamine, daturine, and duboisia are not only closely related, but are identical with each other; and that atropine and hyoscyamine, though not identical, are isomeric in composition. According to these statements there would virtually be only two alkaloids, atropine, and hyoscyamine. Chemically or analytically, and physiologically, this may be true, but their therapeutic action in the whole of their applications differs so much in many

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particulars, that one cannot be substituted for the other.

Atropia and homatropia are obtained from belladonna; hyoscyamine, of which there are two alkaloids, the hydro-bromate and the hydro-iodide, are obtained from hyoscyamus; daturine from stramonium; and the alkaloid duboisia from duboisia myoporoides, a plant indigenous to Australia. The physiological action of this class of remedies, when administered internally, is so nearly alike that a description may be general.

Atropia is very diffusible when injected subcutaneously; its effect on the circulation is remarkable. A decided slowing of the heart action takes place immediately after a hypodermic dose, likewise, there is a retardation of the pulse-rate, but this only continues for a short time, when a decided rise in the number of pulsations follows. Luschinger* has proven very conclusively, that the action of atropine on the heart is very complicated, and the many theories that have found their way into literature, cannot be relied upon, since not enough care has been exercised in selecting an absolutely pure drug, and in making the observations on the heart when not the least possible outside influence could effect it.

First of all, science is indebted to Bezold, Blöbaum, Bidder and Keuchel, for the physiological action of atropine on the heart. The stimulation of the vaso-motor centers by atropine is not confined to the cardiac ganglia, but extends to the vaso-motor centers, or ganglia throughout the whole body.

According to the experiments of Harnack and Hafemann† on the action of atropine on the heart, they finally come to the conclusion that small doses do not possess any stimulating action whatever, but only cause a slight increase in the heart contractions, which passes off very rapidly.

Large doses cause a diminution of the heart action from the first, ending finally in complete paralysis; the blood pressure is sometimes a little increased but the maximum height never reaches above the normal. It has been generally accepted that the increased action of the heart is due, first to the stimulation of the cardiac ganglion of the sympathetic, and the paralyzing action on the pneumogastric filaments. A slight increase of temperature follows a full dose of atropia, but it does not last very long; flushing of the face, redness of the skin and fauces, some difficulty in swallowing, owing to the dryness of the mucous membrane, occurs at the same time. These symptoms are almost identical with the first symptoms of scarlet fever, for which they have been mistaken. Minimum doses have a paralyzing effect on inhibitory centres of the heart, but their action does not extend any farther, unless the dose is increased at least 400-fold. We, therefore, possess a perfectly safe remedy in atropine to control the inhibitory centres of the heart, without affecting it in any other manner. Dilatation of the pupil is a striking and constant effect of atropine, whether applied locally, internally or subcutaneously. The cerebral effect of this class of remedies is very characteristic — headache, dizziness, delirium and sometimes somnolence. The voluntary muscles are not effected by atropine; the muscular paresis which follows the administration of this drug is caused by an action on the motor nerve trunks and end organs. The sensibility of the sensory nerves is also impaired, but not to such an extent as the motor nerves. Arterial tension is increased by weak doses, and diminished by large ones; dilatation of the pupil occurs through the stimulation of the sympathetic.

We now come to a comparison of the different drugs of this class in special directions. They all possess hypnotic properties, but their action is so different in this connection that one cannot be substituted for the other. The hypnotic quality of hyoscyamine (the hydro-iodide) is more marked than in atropine, as has recently been verified so often, clinically, by reports from asylum practice. The pure alkaloid prepared from the amorphous hyoscyamine called hyoscin, forms a compound with hydro-iodic acid which is the most valuable as a hypnotic, on account of its superior qualities over atropine, as we will see later on. A large dose can be given without disturbing vision or causing a dryness of the throat, which always has been objectionable, besides the sedative action is more marked. Great care is required in the administration of this compound, since it is a pure alkaloid acting rapidly and powerfully.

A great difference as to the dose is found in the various text-books, varying from one hundredth of a grain to one grain. This discrepancy of opinion as to dose, certainly must be due to the number of preparations. It seems as though we could safely put the dose at from one-fifteenth to one-thirtieth of a grain, subcutaneously, of the hydro-iodic compound, while the hydrobromate is much milder in action. The effect is not the same on all patients, therefore the safest plan with so powerful an agent is to administer the minimum dose first, and study its effect, then increase the dose if necessary. It should never be given by the mouth, since there is so much uncertainty as to the onset, duration and degree of effect; but when given under the skin the action is almost immediate, and the proper dose for each individual case can soon be fixed. In insanity where it has been employed largely, it has no curative powers beyond the calming and soothing influence which only acts as a conservator of the patient's strength.

There are a great many voices continually crying against the introduction of new remedies, but in this connection, above all others, there was need for a more efficient agent than we have heretofore possessed, and it may safely be said that this drug is another valuable aid in the care and treatment of furious maniacs. Its action differs from that of morphia or chloral, inasmuch as it does not cause any digestive disturbances, and it effectually quiets the excitement of noisy destructive general paralytics, while they at the same time are able to enjoy out-door comforts. When the dose is larger and sleep is brought about the patient usually awakes refreshed and bright, which is quite a contrast with the state of affairs following large doses of an opiate. Dryness of the throat is not observed by writers when experimenting with this drug, but when given in large doses vision is somewhat disturbed by the accommodation being paralyzed; the pupils dilate, but the symptoms need cause no alarm since they disappear in the course of 24 to 36 hours.

In a case reported by Browne, one-fourth gr. of the alkaloid was administered by the mouth; in the

* Archives für experimentelle pathologie und pharmacologie xiv, 1883.

† Harnack and Hafemann, this same Archives, B. xvii, 1883.

course of ten hours the patient was unable to stand alone, he was unable to move his hand at will, or to speak properly; muscular power was entirely gone. His breathing was not affected, but his pulse had fallen from its usual frequency, 75, to 50 per minute, and in addition was quite weak. The temperature had declined 2°; his throat remained moist and all the symptoms indicated collapse, but after the expiration of fourteen hours, pulse and temperature had again returned to normal, and the patient was none the worse off for having received so large a dose. He had refused food for some time before the medicine was given; possibly that had a tendency to increase the effect of the drug. Eserine in large doses was undoubtedly indicated in this case. It has been given a number of times as an antidote with good results. A solution for hypodermic use should always be made fresh, since it seems to be a very unstable compound; decomposition sets in and renders it uncertain if not absolutely inert. A strong solution can not be made unless by the aid of heat, but heat destroys the effects of the alkaloid; therefore a weaker solution must be used. Daturine, identical with hyoscyamine, has not been largely used; the drugs already mentioned are superior to it in every respect.

Duboisine has been more generally employed, and for the purpose of internal administration a fluid extract of uniform strength has been placed on the market. In general practice it, like atropine, is frequently prescribed for the relief of profuse and exhausting night-sweats of phthisis; in many cases it seems to act more satisfactorily than atropine, because its unpleasant constitutional effects are neither so marked nor lasting as those of the latter drug. As a hypnotic in maniacal or alcoholic excitement it does not compare with hyoscyamine. The dose should be moderate; when the fluid extract is given, two or three drops in repeated doses seems to be sufficient to begin with. The dose printed on the label of the bottle reads from five to ten drops, which, undoubtedly, is too large a dose in many cases. There are even few patients who will tolerate it in five-drop doses, as the writer has had an opportunity to observe; in one instance where four drops three times a day were given to arrest profuse sweating, it caused such disagreeable symptoms after the first day, that its use had to be suspended. It caused severe vertigo, inability to stand or walk, dryness of the throat, dizziness of vision and active catharsis. This may have been one of the more susceptible cases, inasmuch as the dose was a small one. Duboisia is indicated where belladonna was formerly prescribed, which it may in time supersede entirely, since its action is more agreeable to the patient. The employment of this class of remedies in ophthalmology is of extreme importance to the specialist and also to the general practitioner, for not unfrequently the future usefulness of an eye will depend on the early recognition and application of a mydriatic. They all possess the property in general of causing a dilatation of the pupil by acting on the peripheral filaments of the nerves of the iris. It paralyzes the oculo motor nerve end organs which innervate the circular fibres of the iris, and stimulates the sympathetic which innervates the radiating fibres. The special properties in the diseases of the eye of atropia, duboisia, homatropia, hyoscyamine are such that each one possesses its indications, and they cannot be substituted for one another in their whole range of application. Atropine, the most powerful and efficient of the list, is indicated mainly in iritis, on account of its powerful and persistent action. In iritis the pupil does not respond as readily to the action of a mydriatic as during health, inasmuch as the inflammatory action causes a thickening of the structure, an engorgement of the blood vessels and an exudation of lymph into the structure of the iris, which all has a tendency to counteract the ready movement of the iris. Adhesions of the posterior surface of the iris to the capsule of the lens by means of plastic material sometimes prevents the pupil from dilating. When the intraocular pressure is abnormally increased, the absorption of the drug from the conjunctival cul-de-sac through the cornea cannot take place, and the pupil remains contracted. This can be relieved by instilling a strong solution of eserine, or by making a paracentesis of the cornea, thereby reducing the abnormal tension of the comea. A solution of atropine seems to act best when dropped on the cornea; in iritis it should always be employed in a strong solution, not less than four grains to the ounce of distilled water, repeated as often as the case may seem to demand. In iritis with synechia posterior, it may be instilled every 15 or 30 minutes until the pupil dilates.

In plastic iritis, where it is absolutely necessary to maintain a dilatation of the pupil, a very strong solution or the alkaloid in crystal form may be employed, but care must be taken to prevent the tears from running down through the tear-duct, carrying with them the atropine, which will be absorbed and cause toxic symptoms. The finger tips should be placed in the angle of the eye and pressure made on the canaliculi; as a matter of fact this little precaution should always be taken, especially with children, and dangerous symptoms will be obviated. Dryness of the throat and flushing of the face not unfrequently follow the use of atropia, but never to cause any alarm, unless absorption is allowed to occur from the tear-ducts. As the pupil dilates, which occurs in 15 or 20 minutes, accommodation is paralyzed and the individual's near vision is entirely destroyed, on account of the inability to accommodate for the near point. The patient should always be informed of this fact, for it may save him a great deal of uneasiness. The condition of the pupil and ciliary muscle just described remains so for nearly two weeks after the use of the eye-water has been stopped, when everything returns to the normal condition again. Here is where the important point of difference lies between atropine and the other mydriatics; it is the most persistent, therefore, should only be employed where a continued action is required, where strong bands of adhesion are holding portions of the iris back, or as the indication may be. The alkaloid duboisin discovered by Gerlard. of London, is now used as a substitute for atropine in refraction cases; in many respects it is far superior since it dilates the pupil and paralyzes accommodatiom more promptly, while its effects pass off in a much shorter time after the discontinuance of the instillations. It seldom causes any irritation to the conjunctiva, or constitutional unpleasantness. In very rare instances, as reported by Prof. W. W. Seely, who introduced duboisia into the United States, "when a strong solution is employed too continuously it has produced vertigo and

drowsiness." A good remedy can be abused. Not long since, a case was reported in the columns of the GAZETTE, where an individual made three instillations of a one-per-cent. solution of duboisia in the course of an hour, and then spoke lightly of the constitutional symptoms, since he had observed them before, but just such unreasonable things will bring a drug into disrepute, without reason. No text-book or article on the subject of mydriatics recommends such promiscuous employment of a body so powerful as duboisia. The fact that specialists unanimously endorse duboisia, is a sufficient guarantee to the general practitioner who may be called upon to treat eye disease, from necessity frequently, rather than choice, to employ duboisia wherever he may think it is indicated. It is a powerful drug and must be used carefully. The first symptoms of poisoning in man are dryness of the throat and fauces, headache, vertigo, drowsiness and stupor. The skin is reduced and the pulse is quickened. The proper antidote in its whole range of action is physostigma or eserine, preferably the latter; an emetic and stomach-pump should also be used. Eserine given hypodermically is very efficient. The dose of duboisia internally is 1–60 to 1–120 grain of the alkaloid, and two to five drops of the fluid extract. In ophthalmology it is mainly used in refraction cases to paralyze accommodation. The strength of the solution is generally one per cent. (4.8 grains of the alkaloid to one ounce of water,) a few drops of which are installed into the eye by means of a dropper, once, and once only, during 24 hours. If the application is made in a child, the patient should be turned on its face almost immediately in order to prevent the passage into the nasal duct, and the prevention of constitutional symptoms. Its action is more prompt than atropine. It dilates the pupil ad maximum in fifteen minutes, while the effect of one application passes off again in the course of 36 to 48 hours. To paralyze accommodation thoroughly we should not, as a rule, rely on one single application of duboisia, but repeat the treatment once in 24 hours for two or three days. If the spasm of the ciliary muscles is not completely relaxed at the end of this time, (which occurs occasionally,) the probabilities are that atropine must be resorted to, and continued for from two to four weeks. In a case of this kind, it stands to reason that it will require a longer time than usual for the effects of the drug to pass off entirely. It may be used without hesitancy in any case, if only the physician bear in mind that he is employing a powerful drug. It is certainly a most fallacious idea entertanied by some authorities, that duboisia is more powerful than atropine, and it can readily demonstrated by comparing the action of the two drugs on old cases of synechia posterior. In many cases duboisia is quite powerless, while atropine is strong enough to break up the bands. The real effect of a mydriatic on the above class of cases, seemingly can be enhanced by using a myotic first, to contract the pupil; then the mydriatic has an opportunity to act more freely. The action of atropine only extends to the anterior hemisphere of the eye, while duboisia is credited with an effect on the veins of the fundus. It has been employed in iridochoroiditis and the deeper diseases of the eye, but its good effect may only come from the condition of quiet and rest, that the ciliary muscles are put in while under the influence of a course of dubosia. Untoward symptoms seldom appear, and it may be continued for an indefinite length of time. As a therapeutic agent in general medicine, it is superior to atropine both as a hypnotic and an anodyne. It has always been a rare drug, therefore quite expensive, but lately its price has been reduced to almost that of atropine. It is quite soluble in water and will retain its properties for an indefinite length of time when well stoppered.

Homatropine is a mydriatic discovered by Ladenburg a few years since. It can be prepared by the action of hydrochloric acid on the amygdalate of atropia; it can also be obtained from hyoscyamus, in fact is identical with the hydrobromate of hyoscyamus. The pupils respond very rapidly under its influence and it reaches its maximum effect in two to three hours. At the end of 24 hours the action on the pupils and accommodation has disappeared. The action of homatropine, I think, will always remain confined to its dilating effect on the pupil. The effect on accommodation is so slight that it is by no means a reliable agent. It has been thoroughly tested at Prof. Seely's clinic, immediately after its discovery, but its use is no particular advantage. Administered internally, it may become valuable, since it causes no constitutional effects.

Hydroiodide of hyoscin, prepared as above mentioned is the last mydriatic discovered. As a therapeutic agent in ophthalmology it possesses properties that no other drug claims. It acts more rapidly than duboisia and with more force. I have employed it quite largely during the past two years, and have found that it dilates the pupil more rapidly than any other agent; the average time in 60 cases was six minutes. The action on the pupil is interesting to observe. During the course of two minutes the pupil begins to dilate and then contract, but each subsequent dilatation causes the pupil to remain a little wider, until the full effect is obtained. A little caution is necessary in its use, since it seems to be more readily diffused through the blood. One drop of a one-per-cent. solution instilled into the eye in a few cases caused annoying symptoms of vertigo coming coming on about one hour after its use. I never use more than one drop of a 1% solution. In one instance in particular the patient looked as though he was intoxicated, and was threatened with arrest on the street, on account of his staggering gait. In all of the cases the unpleasant symptoms passed away in the course of two hours; children seemed to tolerate it better than old patients

According to my experience with all of the different mydriatics, employed thousands of times both in private and clinical practice, I come to the following conclusions:

1. Atropine, duboisia and hyoscyamus have a twofold interest to the general practitioner, in special and in general medicine.

2. Atropine is indicated in all cases of iritis, and cannot be substituted by any known drug.

3. It is the most powerful of all mydriatics and sometimes must be resorted to, in cases of extreme spasm of the ciliary muscle where duboisia fails.

4. Duboisia is efficient and prompt in its action, yet safe.

5. It does not cause any irritation of the conjunctiva, even in cases where atropine is contra-indicated on these grounds.

6. It is the safest remedy to be used in refraction

cases, since it can be applied daily for weeks in in children without causing any constitutional symptoms.

7. Its effects on accommodation pass off more rapidly than atropine.

8. Hydro-iodide of hyoscin acts more rapidly than any of the other mydriatics, and if it proves by farther observation to be as safe as duboissa, it is certainly the more desirable drug of the two.

9. It dilates the pupil ad maximum and paralyzes accommodation completely in ten minutes.

10. The effect on pupil and ciliary muscle passes off sooner than after the use of duboisia.

11. Homatropia should only be used as a dilator of the pupil to examine the fundus.

12. It cannot be relied upon even in the simplest case of refraction.

13. Experiments show that these drugs, though similar in action in many respects, have distinct properties which assign to every one its specific field of usefulness, which cannot be filled by the others.

## On the Detection and Estimation of Sugar in the Urine. 2. Quantitative Tests.

By A. B. Lyons, M. D., Detroit, Mich.*

Many methods have been proposed for estimating the quantity of sugar in diabetic urine. None of them, however, depend upon the separation of the sugar itself, or even upon the direct weighing of any compound thereof. The nearest approach to a determination of the sugar that has been practised is based upon the decomposition of the glucose into carbonic acid and alcohol by a process of fermentation, and estimation either of the carbonic acid or of the alcohol. The first plan is not adapted to general use, inasmuch as it involves the use of an expensive chemical balance. The principle, however, is simple. The urine (25 c.c.) is placed in a light flask capable of holding about 100 c c. This is closed with a rubber stopper having two perforations, one carrying a straight glass tube extending to the bottom of the flask and closed with a rubber cap, the other connected with a chloride of calcium tube, to prevent the carbonic acid from carrying off with it moisture. A little well-washed yeast (compressed yeast) and a small quantity of tartaric acid (to prevent irregular fermentation) are added, the apparatus weighed and set in a warm place (temperature 30° C., = 86° F.) until fermentation is complete. The rubber cap is then removed from the tube, and air slowly drawn through the apparatus till the carbonic acid is completely removed, when the rubber cap is replaced and the apparatus weighed again. The loss of weight multiplied by 2.0454 represents the sugar destroyed by fermentation, since 100 parts of glucose yield in fermentation 48.89 parts of carbonic acid. Albumen, if present, must be removed before the fermentation.

Instead of determining the carbonic acid, we may estimate the alcohol in the fermented urine, and this is, in fact, the principle of Dr. Robert's ready method described in a former article. (Ther. Gazette, May, 1882, p. 201). This plan commends itself especially to the busy practitioner, as involving little expenditure of time and labor, and requiring no expensive apparatus. It is particularly useful in making daily examinations of the urine in a case of diabetes, to observe the progress of the case and the effect of remedies.

The best plan is to divide the urine into two portions. One portion is to be put into a *clean* vial, tightly corked, and put in a cool place; the other, about four fluid ounces, is to be put into a 12 ounce bottle with a little compressed yeast, and kept for 24 hours in a warm place. The cork of the bottle should be nicked to allow the escape of carbonic acid. When fermentation is complete, the contents of the two bottles are brought to the same temperature, by allowing them to stand half an hour in a basin of water at the temperature of the air in the room. The specific gravity of each is then to be taken with an accurate instrument, and the difference as read off on the scale of the urinometer multiplied by 0.219 gives the percentage of sugar in the urine. According to Dr. Roberts, however, one-half of one-percent. is the smallest quantity of sugar that can be detected by the fermentation test. Although the results obtained by this method are quite satisfactory, it must be conceded that they are only approximately exact, since the products of fermentation, even in solutions of pure glucose, are not always precisely the same, a variable amount of glycerine, succinic acid and of alcohols other than the ethylic, will always be found, and will modify slightly the result. The conclusions reached, however, are as near the truth as those of any other method practiced.

From the specific gravity alone of the urine we cannot obtain even an approximate idea of the quantity of sugar present, unless an estimation is first made of the urea. The determination of urea being readily made, and being in itself of clinical value in a case of diabetes mellitus, it may sometimes be convenient to base an approximate estimation of the amount of sugar upon the specific gravity, after deducting the density due to urea. Thus if the specific gravity of the urine is found to be at 60° F. 1,042, and the amount of urea is 1.7 per cent., we may assume that the density due to sugar is about 1.042—.017= 1.025, and conclude, therefore, that the urine contains 25÷4=6.25 per cent. of sugar, the density of a pure sugar solution containing one per cent., being 1.004. It is evident that this method can give only a very rough approximation to the truth, but in watching a case of diabetes it may sometimes be useful.

Sugar can be estimated in the urine, as elsewhere, by means of its optical peculiarities. A solution of glucose turns the plane of a polarized ray of light to the right 57.6°. In absence of other substances capable of influencing the polarized ray, we may determine the amount of sugar in any transparent solution at once, by means of the polariscope, or polaristrobometer. The process leaves nothing to be desired in point of simplicity, and of rapidity of execution, but we have no assurance, in any given case, that the urine is free from optically active substances, (*e. g.*, albumen,) and the apparatus required belongs only to the equipments of a completely furnished laboratory. The details of the process are therefore out of place, in an article like the present, which aims only to meet the practical wants of the physician.

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THE COPPER TEST,

In some of its numerous modifications, is that which is most frequently employed in estimating sugar in the urine. Fehling's standard copper solution contains in each c. c. 34.639 milligrams of crystalized copper sulphate, a quantity requiring for its complete reduction, under the usual conditions of the test, 5 milligrams of anhydrous glucose ($C^6 H^{12} O^6$). Two solutions should be prepared, as described in a former article (THERAP. GAZETTE, April 1884, p. 200). The analytical process is described by Sutton (Volumetric Analysis, 4th edition, p. 257). Five c. c. of each of the solutions are measured into a thin white porcelain capsule, 40 c. c. of water added, and the capsule quickly heated to boiling on a sand-bath, or by a small flame. No reduction or change of color should occur in the course of a minute or so. (If reduction should occur, change has taken place in the standard solution, unfitting it for use. When the two solutions are used, this is not likely to happen, but if it should, a fresh alkaline tartrate solution should be prepared.) The urine, so diluted with pure water that it contains about one-half of one per cent. of sugar, is now run into the boiling copper solution, from a burette, rapidly at first, then by small portion, at intervals, according to the effect produced, until the blue color of the solution is just discharged. In presence of the red deposit of cuprous oxide, it is not easy to hit this point exactly, but by inclining the capsule so that the color of the clear supernatant fluid can be observed against the white porcelain, it can generally be made out with sufficient precision. In any case a second experiment should be made, which will occupy less time than the first, and the result of this second experiment should be accepted, rather than a mean of the two. Suppose now that 8 c. c. of the diluted urine have been used, four volumes representing one of the urine. The 8 c. c. of diluted urine, equivalent to 2 c. c. (=2000 parts) of the original specimen, contain .050 (=50 parts) sugar, and the urine contains 2000÷50=2½ per cent of sugar.

Dr. Pavy now employs an ammoniacal copper solution for estimations of glucose, and thus avoids the troublesome precipitation of the cuprous oxide. The process has been recently described in full (Lancet, March 1, 1884,) and is as follows:

The test solution consists of :

Copper sulphate, cryst. 4.158
Rochelle salt, re-crystallized, 20.400
Caustic potassa 20.400
Strong ammonia (sp. gr. 0.880) 300. c. c.
Water q. s. to make 1 liter.

(To make one wine pint, use copper sulphate cryst. 30.32 grains, rochelle salt, (re-crystallized,) caustic potassa, of each 149 grains, strong ammonia U. S. P. 6 fluid ounces, distilled water to make a pint). Dissolve the potassa and the rochelle salt together in a portion of the water, and the copper sulphate by the aid of heat in another portion, mix the solutions, when cold add the ammonia and finally make up to the required volume with distilled water.

To make the test, place in a flask of about 150 c.c. (five fluid ounces) capacity 10 c.c. of distilled water. Provide the flask with a cork having two perforations, through one of which passes the point of a Mohr's burette containing the diluted urine, the other being fitted with a short glass tube to carry off ammoniacal vapors. The urine should be diluted 1:10, 1:20, or 1:40, according to the amount of sugar it contains, as shown in a previous qualitative experiment, so that from 4 to 8 c. c. of the diluted fluid may be sufficient to reduce the copper solution used. Heat the contents of the flask to boiling, and allow the fluid to drop into it from the burette at the rate of 60 to 100 drops per minute, watching the effect. As the copper solution grows paler, the rapidity of the flow is reduced. The complete disappearance of the blue color is evidence that the copper is wholly reduced, and the quantity of urine which has been employed to effect this contains five milligrams of glucose. Results are calculated precisely as in the preceeding method.

It will be observed that Pavy's fluid contains a larger proportion of copper corresponding with a unit of sugar than Fehling's solution. According to Dr. Pavy, the reducing power of glucose over copper in this solution is 5-6ths only what it is in the case of Fehling's solution. One c.c. of Pavy's fluid corresponds to one half milligram only of sugar.

Dr. Chas. R. Dryer (Fort Wayne Journal of Medical Sciences, Vol. 2, No. 3,) recommends a solution similar to that of Dr. Pavy, but containing a smaller proportion of ammonia, and employing glycerin in place of rochelle salt. The substitution is a good one—care being taken to employ a glycerin which has no reducing action on copper.

Dr. Dryer's observations have convinced him, however, that the proportion of copper should be that of Fehling's solution, in which it is assumed that five molecules of copper sulphate are reduced by one molecule of sugar.

I am not prepared to say whether there is a differance in the reducing power of sugar over solutions containing glycerin and those made with rochelle salt. It seems to me certain that Dr. Pavy, with his wide experience in the use of these solutions cannot be mistaken in his statements, and I am inclined to attribute the observed differences in different fluids to the differences in the details of carrying out the experiment. At all events, the results sought are rather of comparative than absolute value.

A preliminary treatment of the urine with subacetate of lead, to remove uric acid, is not generally to be recommended. Albumen, of course, must be removed, if present. Other substances, which exert a disturbing action, may sometimes be met with, and the possibility of their occurrence must be borne in mind.

The use of the burette in this estimation, may be avoided, and useful results obtained in practice, by the following simple plan, which is moreover rapid of execution and easy of comprehension. Prepare a standard solution of copper, of which sixty minims shall require for reduction one-fiftieth grain of glucose.

Copper sulphate, cryst., 21.28 grains.
Glycerine, ½ fluid ounce.
Solution potassa, U. S. P.,
Stronger ammonia, U. S. P., of each 4 fluid ounces.
Pure water, sufficient to make one wine pint.

Make a mark with a file on the neck of a half-ounce vial. With this vial measure into each of four or five clean two-ounce bottles, a fixed quantity of pure water. Measure into the first of these an equal volume of the urine to be tested. Shake well and fill

the measuring vial with the mixture which is transferred to No. 2, and so on, forming dilutions, 1:2, 1:4, 1:8, 1:16, etc.

Place in a test tube 60 minims of the test solution, and add from a minim pipette, (eye dropper) ten minims of No. 1. Close the tube with a nicked cork and heat to boiling, continuing the heat, if necessary, one minute. If the color is completely discharged, repeat the experiment with 10 minims of No. 2, and so continue until the solution tested fails to reduce the whole of the copper. Suppose this has been found to be the case with No. 5, make another experiment, using 10 minims of No. 5 to begin with, and adding from the minim dropper more of the same solution, one minim at a time at intervals of 10 seconds, until the color is completely discharged. If 4 minims are required, then 14 minims of this fifth dilution (1:32) contain 1-50th grain of glucose. This is reduced (approximately) to percentage by dividing the ratio of dilution by one-half of the number of minims of dilute urine employed, thus, $32 \div 7 = 4.57$ per cent.

In using the ammoniacal copper solutions, it will sometimes happen that boiling is so long continued that the ammonia is driven off to such an extent as to permit the precipitation of cuprous oxide. In such a case the experiment must be repeated, and the operation performed more expeditiously. The addition of more ammonia is not to be recommended.

A solution is put up in hermetically sealed flasks by Parke, Davis & Co., designed to be used for quantitative estimations of sugar. Each flask contains a quantity of copper corresponding with one-fifth of one grain of sugar. To carry out the test in the manner last described, the contents of one of these flasks should be mixed with 2½ fluid drachms (10 c. c.) of stronger ammonia, and distilled water added to make up the volume to just 10 fluid drachms (40 c. c.). Of this solution, 60 minims (4 c. c.) will contain copper corresponding with 1-50th grain glucose. If a burette is at hand, of course the solution can be used in the ordinary way.

Another method of estimating sugar in the urine, depending upon the reducing power of glucose, is that of Knapp. The solution employed contains :

> Mercuric cyanide, 10 grammes
> Sodium hydrate, 13 grammes,
> Water sufficient to make one litre.

It is unnecessary to give details of the process of analysis by this solution, which offers no advantage, unless it be that of comparative stability, over the copper test solution.

Dr. George Johnson has shown that quantitative results sufficiently exact for clinical purposes may be obtained by the use of picric acid in alkaline solution. I am not able at this moment to quote from his original paper on the subject but his method is based upon the tint of color produced by boiling the urine, diluted if necessary to a definite extent, with a solution of picric acid and caustic potassa.

The test is best made by first diluting the urine in the manner already described, to ½, ¼, ⅛, etc. Put into a test-tube ten minims of liquor potassæ, ten minims of a solution of picric acid (1:200) and 20 minims of water. Add ten minims of the urine diluted moderately, and boil sixty seconds. If a strong reaction is produced, repeat this experiment with the successive dilutions until one is found which corresponds nearly in the tint produced with that produced by a solution containing ½ grain to the fluid ounce of glucose.

The color standard is to be prepared once for all by actual experiment, a solution of pure glucose of the strength named being employed. The solution itself cannot be preserved for subsequent comparison, but its color can be exactly matched by diluting a solution of ferric acetate, and this if kept protected from a strong light retains its color indefinitely.

The calculation by which the result is reached is obvious. Suppose the urine diluted 1:16 gives a shade of color somewhat darker than that of the standard, while, diluted 1:32 it gives a paler color.

To the darker fluid, measuring 50 minims, add water from a minim-pipette until the shade of color is exactly matched. (Or if the color is nearer that produced by the higher dilution, the two solutions may be mixed, giving a fluid corresponding to that produced by a dilution of 1:24, and this may then be brought to standard color by addition of water.)

If to the 50 minims there have been added 10 of water, the quantity of dilute urine 1:16 which will produce the required effect will be 5-6 of 10 minims, and this conclusion should be verified by a final experiment, and corrected accordingly. The calculation of the result is easily made $\frac{1}{2} \times 16 \times \frac{6}{5} = 9.6$ grains to the fluid ounce. If the quantity of sugar is small the result must be corrected by deducting ¼ grain as "normal sugar," since normal urine shows a reaction corresponding with that produced by a solution containing one half grain of glucose to the fluid ounce.

Albumen does not interfere with the application of this quantitative test. Where the quantity of sugar is very small, however, its indications may be misleading, and ought to be verified by those of some of the other tests. Urine which by other modes of estimation shows no more than a trace of sugar, sometimes gives by this method as much as one grain to the fluid ounce, or nearly one-fourth of one per cent. Such a urine, however, even if it contain really sugar in the amount named, may give only doubtful reactions with the copper test, unless disturbing substances are eliminated before applying the test.

Finally we are indebted to Dr. Oliver for a most convenient quantitative bed-side test, by the use of the indigo test paper. Test papers containing a definite invariable quantity of indigo carmine and of sodium carb., are necessary for carrying out his process. The papers made for qualitative testing may be employed, but the indications may not co-incide exactly with those described by Dr. Oliver. The principle of his method, however, being understood, the experimentor will find no difficulty in adjusting the details. The method of making the estimation is as follows: An indigo paper is put into a test tube, with thirty minims of pure water—best distilled water; it must at any rate be soft water. If the solution is of a deep blue color, add more water until it is brought to a rather pale tint. Of this pale blue solution, 30 ♏ are transferred to a test tube, a carbonate sodium paper added, one minim of the urine introduced by a minim dropper, and the solution raised to the boiling point, and kept at that temperature, but not allowed actually to boil, the effects being carefully noted by aid of a watch. If a yellow color is reached in 30

seconds, the urine contains 35 grs. of glucose to the fld. oz. If it require 60 seconds, the quantity is 10 grs. If two minutes, five grs. If at the end of 2 minutes the yellow color is not reached, observe closely the tint. A reddish yellow indicates four, red three, purple two, violet one gr. If no change of color is perceptible the experiment may be repeated, using two minims of urine. When a change to violet occurs in 2 min., there is present one-half grain sugar to the fluid ounce.

If the first experiment indicate the presence of more than 10 grs. to the ounce of sugar, dilute the urine until it is brought exactly to this strength, and calculate the quantity of sugar from the amount of dilution. The method is capable of giving results comparable in exactness with those furnished by the copper reduction test, and does not require the preliminary removal of albumen, which is essential for that test, neither are the results vitiated by the presence of an abnormal quantity of uric acid. The reagent, moreover, can be carried in the vest pocket together with all the apparatus necessary for making the test, and is thus ready for use at any moment

## Kairine.

By Joseph Ziteke, M. D., Napoleon, Ind.

IN the last number of the April No. of The Therapeutic Gazette I took the liberty to give to the profession the experience of Prof. von Hoffer, with kairine in pericarditis, acute rheumatism and intermittent fever. Permit me now to communicate his farther experience with the same drug in other important diseases:

*Pneumonia.*—Docent von Hoffer says, that he had occasion to try the drug in several cases of this disease. Of these I shall report chiefly upon three of the most important, and give his conclusions:

*Case No. 1.*—Christian L., 16 years old. Taken on the 22d of May with the characteristic chill and pain on the left side. Admitted to clinic May 25th. Status præsens: The patient weak and emaciated; reveals the bronchial breathing and dullness on the left side, front and behind. Temp. 38.8° C. (101.8° F.) Pulse 88.

May 26th, while the temperature was 39° C (102.2° F.) he was given 12 grains of kairine, and every following 2 hours, 6 grains. Two hours later the temperature fell to 37.1° C. (98.8° F.) but in a few hours rose again, in spite of the continuous doses of the remedy, to 40° C. (104° F.) The temperature fell again towards midnight, and in the morning hours of the 27th of May, was even so low as 37° C. (98.6° F.) where it remained thus, with few variations, till the evening, vacillating between that point and 38° C (100.4° F.) The next day, towards noon, it rose to 38.8° C. (101.8° F) but fell soon again to 37.2° C. (99° F.).

On the 28th no kairine was given, but the same vacillation of the temperature was observed as on the day before. The course of the disease was protracted and for some time doubtful. During the whole period in which kairine was given, the patient sweated copiously, had several violent chills, which seemed in no way co-incident with the rise or fall of the temperature. The urine, free of albumen, was highly colored. The rather small pulse agreed with the variation in the temperature.

*Case 2.*—Josephine K., 50 years old. Taken the 23d of April with a violent chill, pain in the chest and frequent cough.

Admitted 24th of April, towards the evening.

Status præsens:—Patient strong and muscular; firm bones; behind, on the left side, from the lower scapular line, dullness and bronchial breathing. In some places course râles. Temp. 40° C. (104° F.) Pulse 120. Urine free of albumen.

Medication with kairine on the 26th, when temperature was 41° C. (105.8° F.) First, 12 grains of kairine were given and followed by 6 grains every two hours.

The effect was at first excellent, for during the next four following hours, the temperature fell nearly one degree every hour, till it came at 37.3° C. (100.7° F.) where it remained at a stand-still.

The farther medication with kairine was without any effect, though it was given continuously till the 3d of May, the temperature rising and continuing firm at 39° C. (102.2° F.) and twice or three times even to 40° C. (104° F.) Only in the morning hours was a remission observed, the thermometer showing usually 37° C. (98.6° F.).

This patient also was literally bathed in sweat during the whole period that kairine was given, and complained of acute headache, great thirst and general weakness. Farther, several cold spells and regular chills troubled the patient five or six times during every 24 hours. The pulse was always frequent and over 100, the urine had its characteristic color, but contained no albumen or sugar. The pneumonic infiltration continued to spread farther during the whole time of medication with kairine, and was joined by a pleuritic exudate, so that the patient could not leave the hospital for several months. On the 28th of July the infiltration of the upper lobe of the lung had not yet disappeared entirely, and every afternoon she is visited by a return of high fever, against which kairine, even in the largest doses, was quite impotent.

Case No. 3.—P. Theresa, 21 years old. Attacked 7th of April with acute rheumatism. Was treated for a week with salicylic acid, and considered herself cured and well, when on the 14th of April a severe chill with pain in her chest forced her to ask for admittance in the hospital. Temperature 39.8° C. (103.6° F.)

Status præsens: Patient pale, yet not entirely badly nourished; slight dullness in the right lower lobe, small rattling sounds and bronchial breathing. The heart sounds normal; pulse 96°, full and rhythmical. Urine normal and free of albumen. Temperature 40° C. (104° F.).

Received at that stage five grains kairine. This dose had no effect at all, and as the temperature, which was taken every hour, was rising continually and had reached several times to 41° C. (105.8° F.), the dose was increased to eight grains every two hours. This subdued, indeed, every farther rising and the temperature remained abated till the end of the sickness. This patient also perspired without any interruption, felt very weak and faint, was full of fear and anxiety, and had several violent chills. The urine was dark and of brownish color.

Docent von Hoffer gives the following personal opinion of kairine and its efficacy in pneumonia:

"Even in pneumonia, where the dose was nearly the same with all the patients, the effect of kairine was in one case observed to be excellent, whilst in the other cases its effects appeared slowly or not at all. In short, my experience was similar to that of Dr. Seifert, of Würzburg. There was no 'constant lowering of the temperature' observed in my cases, nor could I detect the beneficial effects so much spoken of by Filehne; on the contrary, all of my patients suffered severely from profuse sweats, often repeated chills and anxiety and general depression."

*Pleurisy.*—M. P., 26 years old, and sick for 14 days, suffering from pain in the left half of the thorax and acute fever. The patient is very weak and emaciated. Physical examination of his chest reveals a pleuritic exudate of the left half of the thorax. The heart-beat is felt on the extreme margin of the right half of the chest; the temperature is 38·3° C. (101° F.) and the pulse 88. Quinine having been given without any benefit, kairine was administered.

The first dose was given on the 3rd of May, eight grains every two hours, and continued during a period of five days. The temperature fell slowly—not suddenly—to 37° C. (98·6° F.) but rose again, in spite of the continuous dose of kairine. As a whole, however, the temperature was lower during the whole time than before the administration of kairine, chiefly in the late evening and early morning hours, when it fell to 37° and remained thus for several hours, whilst during the time of quinia medication, it remained steadily at 39° (102·2° F.). As often as the temperature was about to rise, patient complained of feeling chilly, and even when the thermometer showed no increase, he complained of a general cold sensation all over his body. The troublesome sweat was also observed in this case. As the weak condition of the patient grew from day to day more dangerous, and as no physical change for the better was observed in the patient, the profuse sweats and often repeated chills making him weaker from hour to hour. Kairine was discontinued and other remedies applied. So much, however, must be said, that after the discontinuation of kairine the temperature rose at once to 39° C. (102·20 F.) and remained so during the whole time of farther treatment, till the change for convalescence appeared. The urine had the same aspect and color as in other cases, when kairine was given.

In another case of pleurisy, with high fever, the temperature fell after the first dose of kairine (twelve grains at first, followed by six grains every hour,) nearly 2° C. (3·6° F.) lower; the lowering being accompanied by profuse sweats, but rose again with severe chills. However, even in this case, it remained lower as long as kairine was given, than it was before its administration. Acute burning in the forehead, nose and throat was also observed. The frequency of the pulse corresponded with the high or low degree of the temperature.

*Tuberculosis.*—T. A., female, 32 years old, suffering for several months from cough and moderate dyspnœa, was found on examination, to be afflicted with a far-spread infiltration of the left superior lobe of the lung, and also a cavern in the same part of the organ was detected.

Temperature 39.6° (102.2° F.) pulse 120. Kairine administered first in doses of 12 grains, then every two hours 6 gr., during five consecutive days. The same effect as before was also here observed, the temperature being in the morning 38 C. (100.4 F.), whilst in the evening it rose to 39° C. (102.2 F.). The patient sweat very profusely, felt weak and dizzy, and her sensorium was even a little impaired. No chills were observed, but an oft-repeated and general sensation of cold all over the body. The dark brown urine having been exposed for three days to air became clear again. The temperature after the discontinuation of kairine rose to 40° C. (104° F.) and 41° C. (105,8° F.), and remained so steadily till death.

In another case of tuberculosis, the patient being a young girl of 15 years, kairine was at first given in the dose of three grs.; later of five grs. every two hours. Here also sudden fall of temperature was observed in the first few hours, but just as in the previous case, it lasted but for few hours, and rose again, accompanied by a chill and profuse sweat, to a higher degree.

In order to reach the same low degree of temperature of a previous day, it was necessary to give the patient a double dose of kairine the following day. Thus four grains reduced the temperature to-day to 37° C. (98.6° F.), eight grains were necessary to retain or to reduce it back there again on to-morrow. The temperature observed and noted, which shows evidently the excellent but too short efficacy of kairine, was as follows:

| Hour. | Temp. | Hour. | Temp | Hour. | Temp. | Hour. | Temp |
|---|---|---|---|---|---|---|---|
| 8 | *39.3 | 9 | 39.5 | 6 | *39. | 5 | †40. |
| 9 | 38.9 | 8 | *39. | 7 | 39.3 | 6 | 37.7 |
| 10 | *38.3 | 7 | 39. | 8 | *39.6 | 7 | *37.4 |
| 11 | 37.8 | 10 | *39.5 | 9 | †39.7 | 8 | 37.3 |
| 12 | *36.8 | 11 | 39. | 10 | 37.7 | 9 | *39. |
| 1 | 37. | 12 | *39. | 11 | 37.4 | 10 | 39. |
| 2 | *39. | 1 | 39. | 12 | 37.3 | 11 | *39. |
| 3 | 40. | 2 | *38. | 1 | *37.5 | 12 | 39. |
| 4 | *39.7 | 3 | 38.9 | 2 | 39.4 | 1 | *38.5 |
| 5 | 39. | 4 | *38.8 | 3 | *40.3 | 2 | 39. |
| 6 | *39 | 5 | 39.3 | 4 | 39.6 | 3 | *39. |

Profuse sweating and a high degree of cyanosis was observed during the whole period of kairine treatment; often repeated, rapid collapse, and a very weak and thready pulse. After the discontinuance of kairine quinine had no effect on the patient, the temperature remaining constantly at 40° C. (104° F.) and 41° (105.8° F.), and the patient died a few weeks later.

In other six cases of tuberculosis Dr. von Hoffer observed the same action of kairine as in those mentioned, with the same effect upon the patient: In all cases the temperature was higher when the drug was discontinued, than ever before, and could not be reduced by any means. The patients whilst under the treatment felt badly, complained of repeated burning in the throat, nose and forehead; one of them showed also considerable psychical excitement after the administration of the first dose. The enormous sweat and oft-returning chills, or at least general sensation of cold, was by all means quite dangerous to the weak and emaciated patients.

*Typhus fever.*—Dr. von Hoffer gives the following experience in this disease:

F. T., 29 years old, complained at his admission into the hospital, that he had been ailing for several weeks, had no appetite, suffered from weakness in his limbs, drowsiness, oft-repeated headache, and, since the last few days, from a profuse diarrhœa. On the chest of this strongly built man plain spots of

* signifies a dose of 3 to 4 grains. † a dose of 6 to 7 grains.

roseola were easily observed, the spleen was enlarged, the ileo-cœcal region sensitive to pressure, the heart normal, though the lungs presented catarrhal symptoms. Patient received in the hospital on the 18th of April. Temperature 39° C. (102.2° F.); on the 19th, 40° C. (104° F.).

Kairine given on the same day, six grains per dose, repeated every two hours. The medication had a quite satisfactory effect. The temperature fell rather quickly, but rose the next day again, though not considerably and for but a short time, and fell again to the normal degree. The patient felt well and pleased with the medicine, showed some signs of appetite, sweated but little and suffered from no cold or chills. The urine presented the usual characteristic color. Patient dismissed cured.

In another case of typhus fever, in which four grains of kairine, given every two hours, produced no effect, a dose of six grains succeeded entirely, as in the first case. The temperature, which was steady up to 39° C. (102.2° F.) and 40° C. (104° F.), fell slowly to the normal. A few exacerbations occurred towards the evening, but these were slight and of no consequence at all. It must be also remarked that in both these cases the subjective state of the patient was considerably improved by the remedy.

*Peritonitis.*—In two cases kairine was given with a view to its antipyretic quality, but without any benefit, and was hence discontinued.

These are the chief cases, which Professor von Hoffer has published in fullness of detail, in the Wiener Medicinischen Wochenschrift, Nos. 30, 31, and which I have presented in a rather condensed form, adding to each of the special diseases, also the opinion of the well-known pathologist. From all the experiments made by von Hoffer, and from the results gained and noted by him, it seems that kairine proved itself most beneficial in the treatment of typhus fever. In all other cases its effect was not satisfactory. The sudden chills, the general cold sensations, the profuse sweats, the drowsiness and faintness, are by no means the most welcome symptoms to a practitioner at the sick-bed of the patient down with pneumonia, pleurisy or tuberculosis.

The acute burning in the head, nose and throat usually takes place when kairine is given in powder form, without enclosure in a capsule. I think that if given in capsules these disagreeable and undesirable effects can be avoided.

Professor Przibram, of the University of Prague, has used kairine in various diseases, but his report seems nearly identical with that of Docent von Hoffer. It is very important for all who wish to try the drug in their practice, to keep in mind that repeated small doses are less dangerous than large doses less frequently given, and that in cases where kairine failed to lower the temperature, all other drugs failed also, the patients dying, and the temperature keeping up to the high degree of 40 to 41° C. (104° to 105.8° F.), to the last.

In the session of 20th June, 1883, of the Medical Society of Berlin, Guttman reported the antifebrile action of kairine, and laid considerable stress upon the fact that the preparations of kairine as now furnished by the manufacturers are nearly free from all impurities which produced those many and undesirable consequences, as recorded by the earlier observers.

He says that all those who used the new preparation of kairine, report it as an excellent antipyretic, and that vomiting, cyanosis and collapse are no longer observed in its train. Also that the chills are observed less frequently, because the dose of the drug and the manner of using it are better known and studied. He warns against its employment in large doses, for the rapid reduction of temperature. He advises small and frequent doses to secure a gradual fall of the temperature, which afterwards remains steady and is less subjected to changes. He thinks that the chief advantage of kairine as compared with the other febrifuges, consists in its positive activity, lowering the temperature at least in three-fourths of an hour after the first dose has been taken; a quality which is of no small importance to the general physician. The dose for an adult, according to Guttman, is about 12 grains, and later three grains every hour. To children up to 2½ years of age, at first three grains, and hourly afterward the fourth part of a grain. The next day the same proceeding is to be repeated.

Riess mentioned that he uses larger doses of the drug, giving 24 gr. per dose, which lowers the temperature for the next five to seven hours, to the normal, and that four such doses are sufficient to keep it reduced for the next 24 hours.

## Translations.

[All articles signed "T" are translated for THE THERAPEUTIC GAZETTE by C. W. Tangeman, M. D., Cincinnati.]

### Concerning Certain Properties of the Ergot of Rye.

Secale cornutum (with its derivatives, ergotine, ergotinine, etc.) belongs to that class of active medicinal agents which are liable to do as much harm as good, whose effect depends on whether they are properly or improperly administered. While, therefore, its employment calls for no special degree of skill nor that great degree of caution which should be observed in the case of really dangerous drugs, it should, nevertheless, be administered with prudence. The value of ergot as a therapeutic agent is incontestable. In virtue of its peculiar properties it is of great service in all capillary hæmorrhages, from the rebellious epistaxis to the dangerous metrorrhagia. Without reverting to its antimenorrhagic properties, which are familiar to all, we shall only refer to the value of the powdered ergot when continuously employed in the treatment, prophylactic and curative, of certain hæmoptyses, whether these be due to incipient tuberculosis, to some undefined congestion of the lungs, or to one of those "arthritic" accidents, upon which Huchard has insisted. This treatment, which was suggested by Duboué, of Pau, and which has in his hands been attended with success beyond his anticipations, is, we think, sufficiently unfamiliar to the profession at large to warrant us in describing it.*

The musculo-tonic and excito-motor action of ergot

* Those who may wish to refer to the original reports can find them in the following articles by Duboué: Recherches sur les proprietes therapeutiques du Seigle ergoté, Paris, 1873; De la physiologie pathologique de la fièvre typhoide, etc., Paris, 1878; Etude comparée du médicament et de la série médicamenteuse, Paris, 1881; Bulletins de l'Académie des 5 et 12 Septembre, 1882; Des effets comparés de divers traitements de la fièvre typhoide, etc., Paris, 1883.

of rye have long been known. After its action had been observed on the uterus it was discovered, through the researches of Parola, Germain Sée, Legros and Onimus, and Holmes, that its action is exerted on the muscular tissue (nonstriated) wherever located. In 1846 Parola proclaimed the calmative action of the drug and its efficacy in typhoid fever and phthisis pulmonalis (Arch. gén. de med., 4th series, vol. XII.); and Holmes, in 1870, pointed out its effects on the capillaries and the vessels of the lungs. Its physiological action, as an excitor of the cardio-vascular muscles, is analogous to that of quinine, and the value of these drugs in certain forms of hæmorrhage is due to their excito-motor action on the muscular tissue. Starting from these physiological data, M. Deboué has investigated the therapeutic properties of ergot, and has convinced himself of the efficacy of the drug in a number of affections, and particularly so in typhoid fever, in which affection it is an efficient substitute for the sulphate of quinine. Hæmoptysis, whether due to "arthritic" causes or to tubercle, is almost always preceded by a congestion of the lungs. Andral, Herard and Cornil have shown that tuberculous deposits are surrounded by an area of vascular distension. It is the property of ergot to provoke contraction of the capillaries, and, consequently, through thus favoring the circulation and regulating the course of the blood, it diminishes the intra-muscular tension and the determination of blood, thus, thanks to its excito-motor power, if not preventing, at least retarding, tubercular evolution and degeneration. If it be a question whether hæmoptysis be of arthritic origin, appearing suddenly and without an appreciable cause, and accompanied by latent or temporary congestion, and not revealing itself by any stethoscopic sign, then rest must be advised and hygiene measures enjoined. One or more injections of ergotine are also to be made, according to the intensity of the hæmorrhage, and it may be advisable to often await the return of the accident before repeating the injection. If the hæmoptysis reappear, congestion manifests itself; râles appear and continue, sometimes, for a long time. And the original arthritic patient may, at the end of five, six or seven years, develope tubercle.*

It is in the initiatory stages, in the purely congestive period, that the treatment by ergot of rye, continually administered, in small doses, gives the most brilliant results.

In order that this treatment should be successful, the first condition to fulfil is to assure yourself of the good quality of the ergot which you employ. The grains should be examined, and we insist on this point, because it is one of the main points, and because, in certain cases, failures have been attributed to the medicine; at other times accidents have occurred, which were traceable the poor quality of the drug. If the grains are friable, or pierced by little holes, and if when broken, a grayish dust escapes, the ergot is of poor quality. In fresh ergot the grain itself is never covered by any dust. It is hard, and presents, when it is fractured, a peculiar and characteristic violet-like color. We do not speak of the powder, the good quality of which it is much more difficult to verify than that of the grain itself, and which, besides, must never be prepared in advance, because the powder changes very rapidly, especially if kept in moist places. It should, therefore, always be used fresh. Ergot should be freshly pulverized, and, if very moist, it is well to add to the fresh powder a quantity of sugar in order to absorb the moisture. Thus prepared the powder of ergot will keep without alteration at least a month. We have even had good results from ergot which was kept four months, but it is easy enough, and preferable, to prepare fresh powder every month, We administer this powder in wafers, or simply in meat juice, and with confections or coffee, but always in small doses, each wafer containing usually 25 centigrammes (4 grains) of the powder, the dose to be varied according to the nature of the disease, and dependent on the circumstances, whether an immediate effect is to obtained, or whether it is desired that it should act gradually and continuously on the organism. It is for this reason that in ague, or aguish affections and in typhoid fever, the doses are generally from two to three grammes (gr. xxx.—xlv.) per day, for an adult; and from 50 centigrammes to one gramme (gr. vij—xv.) per day, for a child of from six to twelve years, while in incipient tuberculosis doses of from 50 centigrammes to one gramme per day, would be sufficient for an adult, if only continued for a long time. The doses vary also naturally, according to the gravity of the disease, the idiosyncrasy of the patient, and the sex, females being generally more sensitive than men to the action of medicine. Finally, it is always preferable to begin with a relatively small dose, in order to test the susceptibility of the patient, and to increase the dose from day to day. If aguish signs disappear it is well to continue the powdered ergot for a long time in small doses (.50 to .75 gramme), and it is in this method that a preventive treatment consists. These doses, which present no danger, can from time to time be interrupted, and can be taken up again after a few days, or after two or three weeks, according to the condition of the case, and often even at the request of the patient.

Through its action on the circulation, ergot of rye, administered in appropriate doses, prevents the extremities from becoming cold, favors digestion, produces a constant relaxation of the pulse, exerts sedative action upon the nervous system, and procures a genuine feeling of comfort, as many patients to whom it has given appetite and sleep, have experienced. Though ergot is generally easily tolerated, its use may be accompanied by accidents, which are the physiological effects of the medicine, but which generally are not persistent. Such accidents are vomiting, nausea, gastralgia, intoxication, almost to the degree of drunkenness, buzzing in the ears, etc. Frequently, however, according to our opinion, the dangers of ergotism have been aggravated, owing, so to speak, to the excess of the contraction of the small vessels, thus causing gangrene by a sort of tetanization of the capillary system. This ergotism which results mainly from the use of an inferior quality of ergot, or a changed product, is not apt to ensue in therapeutic doses, excepting in very rare cases, in which no surveillance has been exercised. Whole populations in France are nourished by rye which often contains ergot, and with the exception of a certain intoxication, which is rather rare, no accidents have occurred (Pidoux). Many pregnant women have taken relatively large quantities of ergot in powder for the

* This is, we think, one of the modes of evolution of tuberculosis, which certain authors have called "phthisis ab hæmoptoe."

purpose of abortion, and have had no deleterious results therefrom (Millet, Chailly, Roche, etc.) Danyau has, in a report to the academy, cited the fact of J. Patterson, who, in order to provoke confinement before term, administered with impunity to a woman more than 100 grammes (℥ iij) of ergot in the space of a few days. We could cite additional examples, and with many patients Duboué has proved the toleration of relatively large doses of ergot of rye. In one case in particular he has been able to administer it during three consecutive weeks at the rate of three grammes (ʒ ¾) per day, without the patients showing the slightest inconvenience. The existence of ergotism cannot, however, be disputed. This fact is incontestable, and only during the last year has a case been reported of the death of a painter of repute, whose leg having been attacked by gangrene, due to the use of ergot, had to be amputated. But it is the duty of the physician to supervise the therapeutic action of the medicine, and to be on the alert for any slight sensation of pricking in the feet, co-inciding mostly with a notable lowering of temperature, while using the drug. This is an absolute indication that the ergot of rye must be stopped. It can, however, be again taken up after two or three days. Extra precautions must, of course, be exercised in such diseases as in themselves expose to gangrenous accidents. But, we repeat, it is the duty of the physician to watch the action of the drug, and not to blame the therapeutic agent for the result of his ignorance or his carelessness.

Without desiring to make the ergot of rye a universal panacea, we believe that if administered in the form of powder of a good quality, freshly powdered, it can be employed to advantage in many cases as a substitute for the sulphate of quinine, and it may be employed with great benefit in a variety of affections, and particularly in typhoid fever, and in the majority of capillary hemorrhages In typhoid fever it is, according to Duboué, as much a specific as quinine is in intermittent fevers, and its use would prevent many of the formidable cases and tardy recoveries due internal hemorrhages, embolism, syncope, etc. In cases of intense pulmonary congestion, where it is a question of combatting hæmoptysis which lasts for a long time, (two weeks, a month, or even longer) this medicine, not expensive and easy to take, has the advantage that it can be continued by the stomach when it is not advisable to continue for a long time regular hypodermic injections of ergotine. While this latter treatment, per injection, is indicated in order to check an immediate accident, it cannot be considered as a method advisable for long continuation. Without speaking of the local pain or of the abscesses to which the injection may give rise, their use condemns the patient to absolute rest, though he may have only half a dozen or so on each extremity.

Facts are more instructive than theories, and among patients which Duboué has had the kindness to show us, there is one, the interesting history of which we will briefly state here, as the conclusion of this short study on the ergot of rye: This man, about thirty years of age, arrived at Pau and had had, during two years, frequent and profuse attacks of hæmoptysis. He was much emaciated, voice gone and presenting stethoscopic signs at the base of the left lung. Duboué put him on ergot in doses of three or four grammes (ʒ i.) per day, and in one year this patient, who necessarily was guided more by his own experience than by the advice of his physician, has taken 863 grammes (2⅛ lbs.) of powdered ergot.

He is no longer attacked with hæmoptysis, nor does he present any morbid signs on percussion, or on auscultation of the lung. He is very fat, weighing about 90 kilogrammes (about 200 lbs ). He is married, the father of a family, carries on an active and fatiguing life, being employed as foreman over a great number of workmen. He continues to take ergot daily, stops it from time to time, and feels himself the necessity of taking it up again, as soon as he notices that "his head is heavier, his figure redder and that his voice tires quicker than usual"—symptoms which disappear as soon as he returns to the drug.

We would advise, therefore, that practitioners should employ the method of Duboué, and that they should transmit to us the results of their experiments. It is in the following words that the wise physician of Pau makes his request, which winds up one of his best chapters: "I do not demand that you should believe me on my word, but that what I say shall be verified at the bedside of the patient. I ask this in advance, that nobody will accuse me of having allowed myself to indulge in frivolous exaggeration!"

It is a difficult and ungrateful task, even for a master, to attempt to secure recognition for a method peculiarly his own and which he alone at first believes to be good. As was said of olden time:

> "Man approaches truth with icy coldness,
> But a lie embraces with fiery boldness."

—*L'Union Medicale.*

## Resorcin in Obstetrical and Gynæcological Practice.

Justus Andeer states that since he has been making observations with resorcin he has always maintained its antiputrid action in a most emphatic manner. Resorcin is a pure antiseptic remedy, especially useful in all septic diseases. So soon as an aseptic condition was obtained, the accompanying fever disappeared. This result seems to show conclusively, though in an indirect manner, that it acts as an antiseptic, by bringing about an aseptic condition and by preventing a continued resorption of the septic material. It does not cause the fever to leave at once, like quinine or kairine, but only after it had exerted its influence as a disinfectant. Resorcin can not, therefore, really be termed an antipyretic, in the proper sense of the term. The weighty emphasis placed by Camille, Fürst and Brieger on resorcinum antipyreticum, I had accepted with a great deal of reserve, and at this writing, even these observers no longer regard it as an antipyretic. In many cases in gynæcology, as well as in diseases of the mouth, throat and stomach the good results ascribed to the effects of resorcin were possibly largely due to the extreme cleanliness and care that was practised.

Resorcin in powder form solidly packed around the womb and in the vagina, after accouchement, prevented an antiseptic material from entering the system, since it was absorbed by the powder, which thus kept the parts perfectly clean and dry.

Resorcin is not only a valuable remedy in obstetrics, but also in gynæcological practice, and the relief of catarrhal, granulous, fungous, zymotic, suppura-

tive, septic and vascular processes. As a disinfectant it is indicated in tuberculous and carcinomatous processes. Remarkably good results are sometimes obtained from it in epithelial hyperplasias, rhagades, fissures, erysipelas and eczema. Resorcin has no effect on the edge of instruments, and it can be employed during any operation. To illustrate the applicability of resorcin in diseases of the genital tract, and its efficiency, I will give a short history of some of my cases:

M. A., æt. 26, well nourished, aborted two months previous, since which time she has suffered severely from pain and hæmorrhages. Ergot only had the effect of giving temporary benefit as regarded the flow of blood. Bi-manual manipulation clearly demonstrated that the womb was enlarged. Micturition and evacuation of the bowels caused considerable pain. The internal os was dilated by means of a laminaria tent saturated with resorcin, for the purpose of making an injection of a 5-per-cent. solution of resorcin in water. The inner surface of the uterus was scraped with a spoon and the raw surfaces treated with resorcin crystals, with the result of permanent relief to the patient.

Miss C. F., æt. 25, suffered for some time from membranous dysmenorrhœa. She made application as the Zürich hospital after having been treated by everybody and everything for 5 years. Examination revealed anteflexion of the uterus, and a slight enlargement. There was considerable hyperæsthesia of the mucous membrane. The inner mouth of the womb was impermeable to the sound. After practicing dilatation for a number of weeks, by means of tents, the sound could be passed to the fundus, which was regularly treated by caustics, and scraped with the sharp spoon, but with little good. It was now resolved to make an injection of a five-per-cent. solution of resorcin in glycerine, just before the appearance of the menses. On the following day another injection of a ten-per-cent. injection was made. This caused a shedding of complete coats of the interior mucous membrane. The remedy was later applied in crystal form, and two years later I happened to see the patient again, and found that the attacks had ceased entirely.

I must call attention to another class of cases in which resorcin acts pleasantly and is very effective. A patient æt. 30, whom I had treated for gonorrhœa while he was a student, the disease occurring in all its complications and in all its forms. After the absence of a number of years he made his appearance again, suffering from a chronic inflammation of the bladder and urethra. The pus which escaped was creamy and copious. Since the patient had been somewhat accustomed to the resorcin treatment, I gradually increased the strength of the injections, but did not observe any reactions from the remedy. I finally concluded to try the influence of a concentrated solution, and employed 15.0 grammes of pure resorcin in one half liter water at one sitting. He assured me that the treatment caused no other feeling save one of constriction in the region of the rectum. The symptoms usually complained of when administered internally, vomiting, dizziness, etc, were absent in this case, possibly since he was accustomed to the use of the drug. It is quite an important point in the treatment of these cases, to use only a chemically pure article; otherwise one may cause a great deal of irritation. In very sensitive patients, the employment of even a two-per-cent. solution causes a reaction, unless counteracted and neutralized by the septic material with which it comes in contact. —*Deutsche Medizinal Zeitung.* T.

## Pilocarpine in the Treatment of Ascites Caused by Disease of the Liver.

Ascites, caused by cirrhosis of the liver, has not been very amenable to treatment up to this time. Most clinicians have, therefore, come to the conclusion that paracentesis was the only resort. Drastics and diuretics had to be abandoned as inefficient, and in fact, there seemed to be little hope left for this class of sufferers. Harley and Roberts claim that repeated paracentesis promises good results, while on the other hand there are those who have never accomplished anything by puncture. Mackenzie reports two cases as cured by means of flannel bandages tightly wrapped around the abdomen. Siegnit combines with the bandaging, faradization of the abdominal muscles. From all the different reported cures one can readily understand that the therapy of ascites, caused by disease of the liver, has been quite unsatisfactory, and most of the cases have been treated on the expectant plan.

During the year of 1880 the author treated a case of this kind by all the remedies that have been recommended in the books, without any results. Finally paracentesis was resorted to, but with each operation matters got worse, and the quantity of liquid steadily increased. It occurred to him to administer pilocarpine immediately after an operation, to prevent or give other course to the serous exudation, that each time was emptied into the peritoneal cavity. The patient received twice daily 0.015 (gr. ¼), of pilocarpine for six consecutive days with the effect of causing profuse diaphoresis and discharge from the salivary glands. Stimulants (whiskey, 60 grammes [℥ ij]) were given the patient to counteract the weakening action of this medication. From the administration of the first dose the ascites diminished, and the patient was finally discharged from the hospital as cured. Three months later the patient was examined but did not discover a symptom indicating disease of the liver or ascites.

Another case the author treated in conjunction with Dr. Haas. The diagnosis was an enormous ascites caused by cirrhosis of the liver. The swelling was so great that it caused dyspnœa, for the relief of which paracentesis was made a few times and 20 to 30 liters (5 to 8 gals.) fluid removed. The effect was not lasting. Finally respirations ran 38 and the pulse 118 per minute; the urinary secretion was entirely suppressed. After a consultation it was concluded to employ large doses of pilocarpine, since the case seemed hopeless. The patient received twice daily 0.01 gramme (gr. ⅙) of pilocarpine in a large dose of whiskey, besides some solid food. This drug did not seem to act so favorably in this case, diaphoresis being very scanty. Two weeks later, after another puncture, the dose of pilocarpine was increased to 0.02 (gr. ⅓) and followed by a large quantity of whiskey, with the result of causing profuse sweating. Pulv. jalap, with tart. depuratus, was given in conjunction for the obstipation. The patient gradually recovered, when he was discharged, and he was as healthy as before.

If the good results obtained in these two cases do

not indicate much, they may cause other observers to try the pilocarpine treatment. Paracentesis often does not only do no good but seems to do harm. Both of these patients were very much weakened and it seems almost incredible that they could tolerate 0.02 grammes (gr. ⅓) of pilocarpine twice a day, but possibly the large doses of stimulants given shortly after, did much to obviate the depressing effects of the pilocarpine drug.—*Mittheilungen des Vereins der Aerzte.* T.

### The Disinfection of Sputa of Phthisical Patients.

One of the most important questions before the medical profession to-day is the subject of tuberculosis. The hygiene with the various remedies that are calculated to act as disinfectants, is of exceeding interest to every one. If Koch's ætiology of this disease is correct, it behooves every physician to make an effort to disinfect the sputa, which is a certain carrier of the germ. If such remedies are not discovered, and prophylaxis cannot be carried out, all the invesligations will amount to nothing more than scientific experiments. But a large force of investigators are at work to turn them to practical benefit. Schill and Fischer, in their observations, employed tuberculosis sputa containing spores in large quantities. The result of their work was judged by the effect produced when the material was used to inoculate animals after disinfection. If a tuberculous process resulted, the conclusion was that the agent used was not efficient. The results with preparations of dried sputa were not satisfactory; therefore the authors employed only fresh sputa. There are but few remedies that possess the property of destroying the spores absolutely: Absolute alcohol, after the expiration of 20 hours; a saturated solution of salicylic acid; a three-per-cent. water solution of carbolic acid; acetic acid and liq. ammon. caust. These are among the few remedies that possess any effects whatever. A 5-per-cent. solution of carbolic acid acting only two hours, was found inefficient. The exposure of the preparations to the fumes of iodoform for 24 hours, a solution of arsenious acid 1:1000, iodide of potassium in a one-per-cent. solution and a sublimate solution of 1:500 had no effect to destroy the spores. The action of a temperature of 100° C. (212 F.), was ineffective, but the exposure to the action of a current of steam of the same temperature caused a complete destruction of all life in 15 minutes; decomposition of the expectorated mass did not deprive it of its virulence.

From the above experiments carbolic acid appears to have yielded the most perfect result, a 5-per-cent. solution in the course of 24 hours completely destroyed the infectious principle. The quantity required is to be about as much as the fluid to be disinfected; of all the other agents a larger quantity is necessary.—*Prager Medicinische Wochenschrift.* T.

### Extractum Stigmata Maidis in Diseases of the Heart.

During the past three years Dupont has employed this extract in heart diseases with very good results. The extractum stigmata maidis reduces the action of the heart and increases diuresis. It is, as a rule, well tolerated. As a rule, its diuretic action is manifest on the first day after it is administered, and not unfrequently this action increases until after the third day. The amount of water excreted often increases from 500 grammes to 1,500 and 2,000 grammes (Oj-jv). It is especially indicated in diseases of the heart with œdema of the lower extremities, or general hydrops, in which class of cases it displays its power as a diuretic. As the œdema disappears the blood supply throughout the system is better regulated; the pulse beat is more regular, the heart's action is slower and more rhythmical. While the general condition of the patient improves rapidly, dyspnœa does not seem to be influenced by the medicament. In cases of hypertrophy, contractions, and insufficiency, the same results were always noted. The reason why this drug deserves praise is because it is so well tolerated by all the patients. When compared with digitalis it acts more rapidly, while there is not so much difference between its action and that of convallaria majalis.

In the beginning Dupont always administered the drug alone, until he had carefully studied its action, after which he combined with it bromide of potassium, iodide of potassium and milk. With regard to the dose, the largest amount given was 3 grm. (3 ¾), three times a day, one hour before each meal, with a little syrup. Generally half this quantity was sufficient to bring about a diuretic action.—*Centralblatt für die Gesammte Therapie.* T.

### Ergotine and its Toxic Action.

Permit me to submit my reflections on this subject, excited by an article on this subject by Dr. Debierre, professor of the faculty at Lyons:

The ergotine which I discovered in 1840, and which the Society of Pharmacy of Paris, awarded with a gold medal, does not possess any toxic action. The base of my work consisted in discovering two distinct and essential principles: ergotine, very soluble in water, and a poison, insoluble in water, but soluble in ether. Ergotine properly prepared is completely deprived of all toxic principles, and never produces the least accident. At the beginning of my discovery I have taken as much as 30 grammes (℥ j) during the course of eight hours without experiencing any inconvenience. The solution is clear and limpid and never forms a deposit. The dizziness, formication of the extremities, convulsive shocks and other analogous symptoms certainly belong exclusively to the toxic principle of the ergot employed, and of which the preparation had not been entirely freed, as I have described in my treatise on "Ergota Secale," published in 1846. You yourself, Dr. Beaumetz, in the different applications that you have made with success with Bonjean's ergot, have never observed any toxic action. The remedy and the poison found in ergota secale and separated by my process, have each one their separate actions. The ergotine is deprived of its toxic action and possesses the property of arresting hemorrhage, exciting contraction of the uterus, and stimulating the muscular system in general. The toxic principle has a sedative and stupefying action, as is shown by the symptoms and organic disorders following the poisons of this species. Bonjean's ergot may be given in doses of several grammes per day and employed with little inconvenience. The ergot of commerce always contains traces of the irritating properties of the drug.

—Bonjean, *Membre de l'Academie des Sciences de Savoie.* T.

### Iodide of Potassium in Asthma.

The favorable observations of Germain Sée, Winternitz and others, with iodide of potash in asthma, have been verified. Frensdorf, who recommends it as a prompt and efficient remedy that cannot be compared with any other drug, employ it in this affection. He dispensed it in doses of 3 grammes (gr. xlv) three times daily. Not unfrequently the dyspnœa yielded the same day; if not smaller doses were repeated the following day. The catarrhal condition that usually accompanies an attack was treated with 1.5-2.0 grammes (gr. xx.-xxx) continued for some time. In the author's estimation this plan of treatment also did much good as a prophylactic, if not to keep them away entirely, then to lengthen the intervals between the attacks. Iodism when present is no reason why the remedy should be suspended; the symptoms disappear very rapidly and the treatment can be continued.—*Mittheilungen des Vereins der Aerzte.* T.

## Correspondence.

### Philadelphia Letter.

In my last letter I spoke of the investigations of Drs. S. Weir Mitchell and E. T. Reichert, to illustrate the kind of work that is being done in this medical center on the science of drugs, and promised to refer in my next letter to the work of others in this connection.

Probably the hardest worker we have in the field of physiological therapeutics, in Philadelphia, is Prof. H. C. Wood, of the University of Pennsylvania. Space will not permit me to even enumerate the achievements of this great man in the scientific field, but a brief description of his work on fever, will be of interest.

There have long been two prominent classes of theories in regard to the fever process, one being that fermentative changes in the blood cause the development of an excess of heat in the body, while in accordance with the other, fever is the result of a disturbance of innervation, and, at least in part, due to the retention of heat in the body. In the researches of Prof. Wood, the amount of heat dissipated from the animal was measured with reasonable accuracy, by means of a calometrical apparatus, consisting of an iron box, let down into another box filled with water, the inner box containing the animal to be experimented upon, and the outer box covered with a mixture of cow's hair and sawdust, to prevent loss of heat by radiation. Air was forced through the box containing the animal by means of appropriate apparatus, and the temperature of the air passing through, as well as the temperature of the water, was taken at stated intervals and the results compared. It was found that the elevation of temperature in fever, which was artificially produced in the animal by various means, is due to a disturbance in the relation between the function of heat dissipation and heat production. There are two sources of animal heat, food which is burned in the body without assimilation, and the stored material of the body, *i. e.* assimilated food. Thus after a full meal the hourly amount of heat generated in the dog may rise thirty, or even forty per cent. The temperature however, of the animal, is not increased, because heat dissipation keeps pace with heat production. In the unfed animal heat production continues until all the available tissue of the body is destroyed and the creature perishes, as it is said, of starvation; really however, in most cases, of cold.

In fever no food is taken, at least by the dog, but the amount of heat generated is greater than in the animal in health, except after the ingestion of food. There is, therefore, increased destruction of stored material. Hence the wasting of fever. This increased production of heat is not the sole cause of the high bodily temperature, for it is not nearly equal to the increased production of heat after a meal, when the temperature does not rise. The function of heat dissipation is in fever also affected, so that the increase of heat lost does not correspond with the increase of heat produced, and the animal becomes hotter.

Dr. Wood, by a series of elaborate experiments, proved that the nervous system directly controls the production of heat by the destruction of tissue, entirely independent of any influence which it (the nervous system) has upon the circulation. Either in the pons, or above it, there is a center whose function is to inhibit the production of heat by the tissues, whilst the centers which control heat dissipation are in the medulla. A palsy of the inhibitory heat center is followed by an enormous increase in oxidation of tissue, and if the centers in the medulla are not active, this excess of heat is not thrown off, and fever results.

The results arrived at by this distinguished investigator are confirmed by their close accord with those obtained by Professor Burdon Sanderson, by chemical studies upon the elimination of products of tissue waste in health and in fevers. At the International Congress in 1881, Prof. Sanderson, who, in Europe, is considered the highest authority in this branch of physiology, publicly expressed his opinion that the general conclusions of Prof. Wood must be considered as established.

These researches extended over several years and were attended with a great deal of expense, the finished papers, costing, in fact, about twelve hundred dollars, not including its publication. It is important to take into consideration the expense of researches of this kind, for the introduction of physiological therapeutics is a very costly work, is attended with great labor, and many difficulties, requires special training, and the investigation of a single subject often requires years. There are those who argue that every new drug introduced should be definitely fixed as a therapeutic agent by test on animals before it is introduced to the materia medica. This, however, is very impracticable; first, for the reason that it would take so much time to carry out such a plan that progress in the knowledge of the materia medica would be hindered, instead of being promoted; and, second, because often the most careful test then is much more to learn, and it is impossible to definitely fix the value of a new therapeutic agent byany system of research at present in our possession.

But this work of Prof. Wood has opened up a new field of investigation of the effect of drugs on the fever process, which he is already working with interesting results, and the time

will probably come when we shall know the effect of drugs on heat production and heat dissipation by their action on the nervous centres connected with and controlling these functions, and, I hope, now that the subject has been introduced, to have the future privilege of reporting the results of some of these interesting and important experiments in your valued columns. S.

### Information From Unscientific Sources.

In the working and development of therapeutics it is important to devote proper attention to information from unscientific sources. This remark of mine is called forth by the oft-repeated criticism, that information of this kind is founded on insufficient observation, and, therefore, is of no value whatever. It would be well to call the attention of those who argue in this way to the fact that, especially with regard to medicinal plants, the medical profession can not lay claim to a single important discovery—at least I cannot recall one in the whole history of the materia medica. The employment of nearly, if not all, medicinal plants is antedated by prior use in the hands of ignorant natives, quacks, and Indian medicine men, or the plant has been the nostrum of some old woman. The knowledge of every medicinal plant has had its evolution from ignorance and superstition, to its present level of enlightenment; and it may be added that this evolution is still going on, not only with newer drugs, but with the older ones also. As our knowledge of physiology increases, so will increase our knowledge of the use of such drugs as opium, cinchona and belladonna. And what is true of these old and better known drugs, applies with still greater force to the more recent additions to our materia medica.

Again, I have heard it urged that there is no necessity for further additions to our armamentarium. Drugs are classified as cathartics, narcotics, etc., etc., and every new drug that is discovered must fall under one or another of these heads. This, however, is a fallacious argument. The classification of the text-books is entirely arbitrary, and not scientific. In course of time the knowledge of the action of drugs may so increase that it will be possible to found a scientific classification. Drugs are already finding new uses outside of present classifications. Recent investigations in the field of germ life, for example, may result in a new branch of therapeutics of the greatest importance. The administration of an infinitesimal amount of a drug inimical to the life of one of these germs is often attended with the most striking results. The Popular Science Monthly, for June, calls attention to some important essays on this subject, published in the Revue Scientifique, by M. Souley, who refers to the results obtained by M. Raulin in the cultivation of the microscopic plant aspergillus niger. If one part of nitrate of silver be added to 1,600,000 parts of the liquid in which this plant is growing it will stop its growth at once. The editor goes on to say: "Now, supposing the aspergillus to be a human parasite—a living contagium—capable of self-multiplication in the human blood, and of so altering the constitution of that liquid as to produce death; then, the introduction into the blood of a man weighing sixty kilogrammes (135 lbs.) of five milligrammes (gr. 1-12) of nitrate of silver would insure, if not the total effacement of this contagium, at all events the neutralization of its power to destroy life." An index finger here points out to us one direction which therapeutics is to take in the future, and this direction cannot, properly, be said to be governed by our present classification

Taking into consideration the crude condition of therapeutic knowledge, and the rapid advances now being made in the knowledge of disease, it would seem to me a far more scientific and progressive way to break loose from the iron-clad rules of the past, and devote more time to original research. Especially would I call attention to the importance of original investigation of medicinal plants. It is a mistake to believe that the flora of America is exhausted. It has already been ascertained that North America has many plants of undoubted medicinal virtue, and it probably has many more; and the forests of South America are filled with thousands of plants, many of them powerful poisons, with which botanists are entirely unacquainted. The THERAPEUTIC GAZETTE is doing good work in its peculiar field, and should be encouraged.

The introduction of any thing new here in the east always meets with opposition, and the opposition is often a very bitter one. Especially is this true when the introduction is from any but recognized sources. The representations of the great eastern teachers are listened to with respect, but what is said by a country doctor in the "western wilderness" does not merit credence. It is forgotten that some of the best original work, in the knowledge of disease and its treatment, has been done by the country doctor. Take as an instance the immortal Jenner, a simple country doctor, but to whom mankind will forever be in debt. To be sure he did not demonstrate the reason *why* vaccination is a protective against small-pox. This has been left for the more scientific workers of the laboratory to find out, but his work has proved of inestimable value, nevertheless. While not in the least disparaging the work of our learned experts in the great medical centers, who are doing so much for the cause of science, I must put in a plea for information from unscientific sources, and must thank the GAZETTE for admitting articles which, judged from the highest scientific standards, cannot be regarded as by any means conclusive, but which have their value in directing the minds of more careful observers into channels which often lead to discoveries of great value upon more careful exploration. I should like to hear a more general expression of opinion on this important subject from your readers.

A CONSTANT READER.

### The Hypodermic Injection of Piles.

The GAZETTE for April contains several answers to the query of our Tennessee brother as to the hypodermic mode of treating piles. I quite fully agree with Dr. Chase, of Geneseo, Ill., in his opinion as to why the carbolic acid treatment, (or more properly the hypodermic treatment,) has been cried down. I am not so orthodox that I cannot accept a good thing, regardless of from whence it came. I watched closely the results obtained by some traveling advertising doctors, and am free to cofess that they cured cases of piles that I and other M. D.'s have totally failed to cure with the old modes of treatment. Well, like Mohamed, I went to the mountain, i. e., I bought from one of the so-called quacks—who

by the way was a regular graduate from Rush College, Chicago—the secret, and have not been sorry that I did so. I have used it during the last eight years, without a failure, or bad result in any of the many cases treated. I use carbolic acid, (full strength) one part, sweet oil, two parts. Mix and inject into the pile tumor from one to four drops, according to the size of the tumor treated. I find it much more satisfactory to inject small quantities of the mixture, even if two or more injections are required, into the same tumor, as the small injection does not cause very great soreness of the parts, as is the case wherein ten to twenty drops of a stronger mixture is used. When using the smaller injection I sometimes find it necessary, after eight to ten days, to inject the the tumor the second, and in rare instance the third time. The patient attends to his usual occupation during treatment, which he is not able to do when the larger and stronger injection is used.

The above facts will, doubtless, go a long way toward explaining why the fears of some of our physicians have been aroused. I think that danger from embolism can only arise, if it occur at all, when very large, strong injections are used. I am credibly informed that the treatment of piles, by injection of carbolic acid and oil, originated in the fertile brain of a doctor in the southern army, during the late war, and that said doctor was a Tennesseean.

FLOYD CLENDENEN, M. D.

LA SALLE, Ill.

### Corn Silk, Aletris Farinosa, etc.

In the past two months, I have had considerable trouble in the filling of my prescriptions for fl. ext. corn silk—stigmata maidis. Invariably the ustilago maidis, corn smut, or what, a certain New York manufacturer denominates fluid ext. "corn silk," but which is really made from the zea mays, and not the stigmata, has been substituted, and no little inconvenience has arisen, particularly in two of my cases. Why this trouble? Simply because our druggists depend entirely upon the U. S. D. for their knowledge, instead of reading the current literature and keeping up with the advance in materia medica and therapeutics. There is no excuse for these mistakes, when for $1 they can get the THERAPEUTIC GAZETTE, which keeps fully abreast of therapeutic knowledge. I would not be without it for ten times it cost. Taken in conjunction with the Medical Age, it gives the busy practitioner all that he can thoroughly digest, and leaves him under no necessity to look elsewhere for information on current medical topics.

Since my article on Aletris Farinosa in the GAZETTE, I have replied to nine correspondents, covering my method of preparing the drug for use. I will here give it again, so that the necessity for further correspondence may be obviated: Take 1 pound of the powdered root and on it pour 1 pint of pure alcohol. Let this remain in some warm place for 16 days, shaking each day. Then filter and use the tincture press. Add enough alcohol to make one pint of tincture. Some will be lost by evaporation, and the powder will take up some which you can not get back. Of this tincture I give 10 to 15 minims, three times daily, in a little water, before meals.

D. P. DUNCAN, M. D.,

Waynesboro, Ga.

### The Hypodermic Injection of Piles.

Dr. J. W. Grirard, of Winchester, Tenn., says that the use of carbolic acid in hemorrhoids is condemned by the majority of leading physicians, but successfully used by non-professional men He further asks if there is not something radically wrong in the method of using the remedy, or in the act of condemning it.

If my experience with the use of the hypodermic syringe in hemorrhoids is worth anything to the profession, I give it cheerfully:

I have used it for about ten years, and have treated, I think, about two hundred cases without a single failure, and in no case has the tumor returned thus far. My course of teatment is generally to take one part of tannic acid, two parts of carbolic acid, four parts alcohol, and eight parts glycerine. Inject each pile separately, and in a few days they slough away and generally heal kindly under dressings of carbolated cerate. If there is much constitutional disturbance, I generally control it with steam bath, or hot sitz bath. My confidence in the method is so strong that I would persist in its use in spite of all that could be said against it. I would gladly answer any questions in my power that would enlighten any professional brother on the subject.

M. F. CLAYTON, M. D.,

Sacramento, Cal.

### Iodide of Potassium as an Antigalactagogue, Formula for Alopecia Areata.

Relative to the use of potassium iodide as an antigalactagogue, I would say, from actual experience, extending through twenty years, that it is of great service. I have had occasion to repent the use of it when thoughtlessly I have prescribed it to nursing women, for other ailments, because of this peculiar action on the mammary secretion. I think Gunning S. Bedford gives a formula for its use for the purpose of restraining the flow of milk.

"M. D." will find the following formula, from Tilbury Fox, of service in alopecia areata; at least in one marked case in my own practice it proved to be of great benefit:

℞ Tr. nucis vom, ʒ ss
Tr. cantharidis, ʒ nj
Glycerini, ʒ ij
Aceti destil, ʒ jss
Aq. rosarum ad. ʒ vj.

M. Sig. Apply twice a day, with brush or sponge, to the area affected.

If the hairs show spores of a parasite, the following wash, carefully applied at bed-time with a camel's hair brush, may assist the other, which is only stimulating:

℞ Hydrargyri bi-chloridi, gr. j
Aq. rosarum, ʒ jss.

M. Sig. For local use.

This is a good parasiticide in all forms of parasitic disease of the skin.

RALPH C. HUSE, M. D.,

GEORGETOWN, Mass.

### A Chloroform Inebriate.

I have in my clientele a patient who indulges in daily inhalation of chloroform, using an average quantity of ʒ x a week. Frequently she has been

known to consume this amount in a single day. She has kept up the habit for fifteen years, and for the past two years she has been confined, part of her time, to her bed. At times she is seized with tremors and hallucinations, and has, to all intents and purposes, delirium tremens.

If there is any method of treatment which would promise success in this deplorable case, I should be pleased to receive it for trial.

A. V. WATKINS, M. D.

BYERSVILLE, N. Y.

### Summer Complaint in Children.

The term "Summer Complaint," is one which covers a great variety of ailments, in my opinion, and I do not believe that the general run of practitioners appreciate the nature of the conditions which are grouped under it. If any one has associated in his mind any definite condition with the name, his conclusion has been reached through his own observation, rather than through the light received from the authorities, for such light is dim and uncertain. Will the editor of the THERAPEUTIC GAZETTE, who, a short time ago, gave us the resumé on pneumonia, indicating clearly the differential diagnosis between the several forms of the disease, and giving much assistance and valuable suggestions covering the treatment thereof, please follow the same course, taking summer complaint for his subject? I believe the readers of the GAZETTE will, generally, agree with me in saying that such a consideration of the subject would be very acceptable.

EM. DEE.

### Iodine in Intermittent Fever.

A few weeks ago, while looking over some old medical journals, my attention was attracted to an article on the "Treatment of Malaria with Iodine." The results of this reatment, as reported, were very favorable. I had scarcely finished the article when I was called to see a case of intermittent fever, of quotidian type. Patient had been sick for four days previous. I administered tinct. iodine, gtt. v., largely diluted, four times a day. After a few doses, patient began to improve, and has had no chills since—over a month ago. Will some of the readers of the GAZETTE favor me with their experience with this drug in intermittent fever?

WALTER J. CREE, M. D.,

Millbrook, Mich.

### The Treatment of Piles by Injection—Ulceration of Rectum.

If Dr. Grirard, who asked for information touching the treatment of piles by injection, will follow the method prescribed by Dr. Wm. T. Fleets, of Brooklyn, N. Y., in the GAZETTE for May, he will agree with me that it is the best method that can be adopted.

Will some good brother please favor me with the plan of treatment which he has found most successful in ulceration of the rectum?

D. H. GREGORY, M. D.

COLUMBUS, OHIO.


# The Therapeutic Gazette

**WILLIAM BRODIE, M. D., Editor.**

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### Death of Drs. Parker and Gross.

ONE by one the connecting links between the present advanced condition of medicine in this country and the times when it was derisively asked: "Who ever reads an American book?" are being snapped asunder. Soon those whose lives have been contemporaneous with the great advances of American medicine, and who have contributed most to that advancement, will live only in history. The last of these workers whose death we chronicled was J. Marion Sims. It now devolves on us to record the succumbing to nature's stern decree of two more of the master minds of the nineteenth century—Willard Parker and Samuel D. Gross—and to place our sprig of immortelle on their new-made graves.

WILLARD PARKER, M. D., LL. D., was of English Puritan blood, has ancestors having emigrated to Massachusetts in 1640. His great uncle, Col. Moses Parker, fought in the Revolutionary war, was wounded at Bunker Hill, taken prisoner and removed to Boston, where he died on July 4th, 1775. On his maternal side was Captain Peter Clark, his grandfather, who was with Stark at Bennington, and also at the surrender of Burgoyne. Dr. Parker's parents were in New Hampshire when he was born, September 2, 1800, but returned to the old homestead at Chelmsford, Massachusetts, (which the doctor still owned at his death) when he was five years old. He was the eldest child, and up to his nineteenth year his time was spent on the farm. The winter months and odd leisure hours throughout the year were devoted to study, and to such purpose that when nineteen he took charge of the district school. By improving the increased facilities for study thus afforded, he was enabled to prepare himself for college. He entered Harvard, and graduated therefrom in 1826. It was

during his freshman year an incident occurred which determined him to adopt medicine as a profession. His chum happened to have strangulated hernia, for which he was treated, but without relief, by the surgeon of the town. Next morning, Dr. John C. Warren, Professor of Surgery in the College, was called in. The ease with which he diagnosed and reduced the hernia made a great impression on young Parker. He graduated in medicine in February, 1830. While still a student, in 1829, he was selected to deliver a course of lectures on anatomy, in the medical school at Woodstock, Vt. In June of the same year he was appointed to the chair of anatomy in the Berkshire Medical College, of Pittsfield, Massachussets. In 1832 he was elected Professor of Surgery in the same school. In 1836, he accepted the chair of surgery in the Cincinnati Medical College. After a course of lectures there he spent a year abroad in the English and French hospitals. The state of his health forbade his return to Cincinnati, which city he had contemplated making his home, and in 1839 the chair of surgery in the College of Physicians and Surgeons of New York having been tendered him, he settled in that city. In 1840, not having any hospital connection, and realizing the necessity of clinical material in the successful teaching of surgery, he visited with his students two of the city dispensaries, utilizing such material as was there afforded him. Soon after interesting cases were selected and taken from the dispensaries to the anatomical amphitheatre of the college. Such was the beginning of what are now known as college clinics. In 1845 when Bellevue Hospital, then the city's almshouse, was re-organized, Dr. Parker was made one of its surgeons, and in 1856 he was appointed surgeon to the New York Hospital. While he filled many other positions of honor and trust it was in those two hospitals and in his capacity as professor of surgery, that he found the chief field of his usefulness and it was in these that he made his fame.

While Dr. Parker performed with more than the average success all the important and rare operations which only great surgeons ever attempt, his chief contributions to the fund of medical knowledge were his pointing out the condition of "concussion of the nerves," as distinguished from concussion of the nerve centres, and which had been previously mistaken for inflammation. Cystotomy for the relief of chronic cystitis, and the operation for the cure of abscess of the appendix vermiformis, are among his contributions, as is also the operation for the repair of laceration of the perineum during labor, in which the sphincter of the rectum is divided near its coccygeal attachments, and the edges of the septum divided so as to give increased uniting surface, the strain upon the sutures being taken off by relief incisions.

Dr. Parker was not a voluminous writer. Early in his career he edited an American reprint of Cooper's Surgery. This was his only connection with the production of anything in the way of a text-book He, indeed, professed a considerable degree of contempt for the "book-maker," and although a number of contributions accredited to him enriched the periodical literature of the time when he was in active life, they were given in the form of reports of his cases and were written by others.

Dr. Parker had retired for some years from the active duties of his profession, but up to within a few months of his death his great physical vigor and that cheerfulness of temper and buoyancy of disposition which seemed to inspire his patients with hope and courage, did not fail him. He died on the 25th of April, in the 84th year of his age, and was buried at New Canaan, Conn.

But while Willard Parker was a great surgeon, and will live as such in American history, it was in his capacity as a *man* that he made the most lasting impression on those who were brought in contact, or who ever enjoyed personal relations with him. He was truly one of nature's noblemen. Of commanding personal presence and great breadth of soul, of courteous and affable manner, and moved by an unswerving devotion to truth and honor, he won and held captive all who came within the circle of his personal influence. He was a man of deep convictions, and thus, of course, had his enemies, but no enemy whom he ever had, and whose regard was worth having, would ever hold that the immediate cause of the enmity had its source in Willard Parker's heart; none, moreover, could ever say that he failed to make amends for any undeserved pain which he inflicted on the feelings of any whom he may have buffeted in the course of his busy life. What greater tribute than this could be paid to human being? It reveals a most beautiful blending of the divine with the human.

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SAMUEL D. GROSS, M. D., LL. D., D. C. L. OXON., LL. D. CANTAB., LL. D. EDIN. Born at Easton, Pa., July 8th, 1805; died at Philadelphia, May 6th, 1884. Another giant fallen, another of the brightest lights in the galaxy of modern surgeons gone out! The name of Gross has for nearly a half of a century been familiar wherever scientific surgery has had its devotees, for his was that breadth of learning, that greatness of mind, and that profundity of genius which make their possessor a cosmopolite. While America claims him as her son, he was scarcely less honored and esteemed abroad than at home, and his name will be mentioned in the history of surgery in connection with those of Hunter, and Cooper, and Paré, and Velpeau, and Billroth—dissociated from all national limitations.

Dr. Gross occupied for so long a time so large a space in American medicine, that any extensive review of his career would be largely a work of supererogation. We shall, therefore, content ourselves with a brief mention of the chief features thereof. He acquired the rudiments of a classical education at the Wilkesbarre academy, and further continued his studies at the high school of Lawrenceville, N. J. After a course of private study under Dr. Joseph K. Swift, of Easton, and Prof. George McClellan, he entered Jefferson Medical College, and graduated therefrom in 1828. After graduation he settled in Philadelphia, where he remained for two years, his time being chiefly occupied with literary work, he having during that period translated several works from the French and the German, and issued his first original work, "Diseases and Injuries of the Bones and Joints." Leaving Philadelphia, he returned to his birthplace, Easton, where he remained for three years, when he removed to Cincinnati, having been appointed Demonstrator of Anatomy in the Medical College of Ohio. Two years later he was made Professor of Pathological Anatomy in the

Cincinnati Medical College. In this capacity he delivered the first systematic course of lectures on morbid anatomy ever given in the United States. While thus engaged he prepared his "Elements of Pathological Anatomy," which was the first methodical treatise on this subject ever published in this country, or, indeed, in the English language. After residing for four years in Cincinnati he removed to Louisville, where, for ten years, he held the chair of surgery in the University of Louisville. In 1850 he resigned to accept the chair of surgery in the University of New York, left vacant by the death of Dr. Valentine Mott. This position he held for but one year, resigning it at the end of that time to return to his former position in Louisville. In 1856 the chair of surgery in his alma mater, Jefferson Medical College, was offered him. This he accepted and held until 1882, when, by reason of the weight of years, he resigned, being succeeded in the position by his son, Dr. Samuel W. Gross, who is still the incumbent, and bears with honor and ability the mantle of his illustrious father.

Dr. Gross had a virile faith in the omnipotence of work, and held that when a man has ceased to work he has, practically, ceased to live. He disclaimed the possession of anything like genius, attributing all he was and had accomplished for his profession and for humanity, to his faculty of working. His mind was always busy during its waking hours. In the rounds of his practice it was absorbed between the visits to his patients, and he never risked the loss of a thought by allowing it to go unrecorded. He would make a note of everything which the working of his active mind brought to the surface, and would elaborate it, if afterwards thought worthy of it, in the quiet of his study. It was in this manner that he accomplished so much literary work. He was, if we mistake not, the most voluminous medical writer in the American medical profession, and his pen was kept busy up to the last, a paper written by him on "Wounds of the Intestines" having been read before the American Surgical Association April 30th, and another on "Laceration of the Female Sexual Organs" was being read by Dr. Busey, before the American Medical Association, on May 6th, even at the time when the royal mind that dictated it was engaged in its final struggle for release from its earthly bondage.

A bare enumeration of the titles of Dr. Gross' literary productions would occupy more space than it is convenient for us to devote. His fame as an author will, however, remain associated with his great work of Surgery, first issued in 1857, between which date and 1882 it passed through six editions in the English language, besides having appeared in several European languages.

Dr. Gross was one of the most courteous and affable and hospitable of gentlemen. He was a man of great breadth of soul and large sympathies. While true to his sense of right as the needle is to the pole, the courtesy of his manner and the affability of his demeanor removed from the wounds which the man with an inflexible devotion to duty must necessarily often inflict, much of their poignancy. He possessed the rare quality of being "genial" without being pliant. He was a man of deep religious convictions, without, however, being dominated by dogmas—he loved his fellow men.

In accordance with Dr. Gross' own special request, an autopsy was held on his remains, after which they were taken to Washington, Pa., and there reduced to their original elements in Le Moyne's crematory. The ashes were gathered together and interred in Woodland Cemetery, Philadelphia, beside the remains of his wife.

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Vale! old teacher and old friend. You have both fought the good fight unto a successful victory. Though removed from us in corporeal substance, your example will continue to guide, instruct, and comfort. The fragrance of such lives as yours permeates far and near, and will last after the finger of time has erased from monuments of marble their story. Such lives as yours can never die. They have become part of your contemporaries' heritage, and they will be perpetuated throughout the long generations. The world is better and wiser because you lived, and that goodness and that wisdom are exempt from the law by which it is appointed unto the physical man to die.

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## The Physician's Responsibility for the Non-Action of Drugs.

IT has been characteristic of man ever since the earliest records, even since our original paternal ancestor sought to lay the blame of stealing the fruit on his dear little wife, our good mother Eve, to shift the responsibility of his faults and misdeeds to other shoulders. We have always been ashamed of Adam for this act, and have always regretted that inflexibility of the law of hereditary transmission, through which his weakness has permeated his offspring. But we have particularly to do at the present time, with this weakness as it relates to disappointments in effects expected to ensue on the administration of drugs to the relief of diseased conditions, for the fact that a man enters upon a particular vocation as a means of livelihood, does not necessarily imply that he thereby raises himself above the weaknesses inherent in poor, frail, human nature. To paraphrase the poet: "All men think all men fallible but themselves," and when a physician fails to observe expected results, or discovers unexpected results, from such medicine, or pharmaceutical preparation thereof, as he may have administered, it is among the rarest possible things for him to look for the more immediate cause in some error of judgment on his own part. He is infinitely more apt to ascribe the result or lack of result, as the case may be, to some defect in the drug or to some error on the part of the pharmacist who made the particular preparation prescribed. He seldom suffers himself to doubt the fullness of his knowledge of the physiological properties of the drug or compound, or to question for a moment, the fact that he overlooked any peculiarity or idiosyncrasy on the part of the patient, which forbade the exhibition of the drug in the particular form in which it was employed.

It may be profitable, for doctrine, for reproof and for correction, for us to examine with the reader, some of the points of more special nature which the above general reference may have suggested, and a disregard for which may possibly have caused him to do injustice to the drug, or the manufacturer of the particular preparation in which it was ordered. It goes without saying that a drug, even as an article

of diet, in order to produce its effect must be absorbed. In order to absorption the drug or food must be reduced to a fluidity and specific gravity which will permit of osmosis. While absorption is usually held to be a vital act, the process is still largely under the control of physical laws. Without attempting any elaboration, we shall merely indicate several of these laws: 1. Other things being equal the lighter of the two fluids on opposite sides of an intervening animal membrane tends to pass to the heavier, more than the heavier to the lighter. 2. That fluid passes through most readily which has the greatest affinity for the intervening membrane. 3. A fluid passes through the membrane more readily when it is readily taken up and dissolved by the fluid on the opposite side. 4. The motion of a fluid on one side promotes the passage from the other side of the membrane. 5. Pressure on the fluid on one side of a membrane powerfully influences the passage of that fluid to the other side.

Except in very rare instances solid and dense ingesta capable of preparation for absorption, are so broken up and diluted by the gastric juice until their specific gravity is reduced below that of the serum of the blood, thus permitting their osmosis in conformity with the first law. Occasionally, however, either because of a checking of the secretion of the gastric juice, or because of an irritability which prevents the substance from remaining sufficiently long in the stomach to be properly acted on, this dilution does not take place and the ingesta traverse the whole length of the alimentary canal and are voided undigested. The bearing of the second and third laws on the process of absorption of medicine is not important, inasmuch as when mixed with the serum to a proper specific gravity it suffers no repulsion by the animal membrane, and when once on the other side mixes readily with the blood. The fourth law is important, for with a sluggish circulation absorption is difficult, and with stagnation in the capillaries it is well-nigh impossible. The fifth law has a very practical interest for the therapeutist. During the presence of matter in the digestive tract, the muscular walls of the stomach and intestines contract on it with sufficient force. In the case of dead tissue the passage through it is markedly influenced by pressure. In the case of the stomach the pressure which it exerts through contraction on its contents, combined with the motion of the blood in the vessels (fourth law) is sometimes sufficient to cause absorption in opposition to the first law. When, however, circumstances exist which prevent conformity with the fourth and fifth laws, absorption is quite out of the question. These circumstances we have in plethora. It is a familiar fact that absorption is slow in proportion to the fullness of the patient's habit, and it is often necessary to cause depletion, either by means of venesection or a brisk hydrogogue cathartic before the effects of a drug can be secured.

It must be very manifest, from the briefest consideration of the above rules, that more is required of him who administers a drug than to simply order it to be poured into the stomach. And yet, how often is nothing more than this done. A patient has an attack of intermittent fever. He may consult a physician for a prescription to prevent a recurrence of the paroxysm, or he may have a sufficient knowledge of the means of cure to cause him to treat himself. In either case, he is apt to have administered, say ten two-grain sugar- or gelatin-coated quinine pills. It is regarded as most essential that this quantity be ingested before, say within twenty hours of the time of the next expected paroxysm. If a physician be consulted he may (although he sometimes does not) have a reference to the condition of the patient, as well as to the fact that he has a disease, but when the patient is his own doctor, the single fact that "quinine pills are good for the ague," is all that is borne in mind. Should carelessness on the part of the physician, or ignorance on that of the patient-physician, result in the exhibition of the pills to a subject with a hard, tense pulse, injected conjunctivæ, hot skin, a heavily-coated tongue, constipation, etc., the chances are that there will be another paroxysm, and possibly that the pills might, on careful inspection of the stools, be found little the worse of the wear and tear incident to their passage through the some thirty feet of their passage between the os and the anus. Should the paroxysm return, suspicion as to the honesty of the maker of the pill will be very apt to be aroused. Twenty grains of quinine is sufficient to break up a tertian; these ten two-grain pills have failed to do so; *ergo* the manufacturer, more anxious to make money than to cure fever and ague, has not put two grains of quinine into each pill. But should the inquisitive patient, by the detection of sundry globular, whitish, masses, of about the size of a pea, in his fæces, be induced to investigate the nature of these masses and discover them to be the pills which he swallowed in all faith, his anathemas on the manufacturer would, we ween, be both loud and strident.

*Moral:* Do not blame the manufacturer for a failure to perform the duty of the physician.

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## The Successful Physician.

THE readiness with which a patient is enabled to resume, with ease and comfort, his accustomed avocation, is, after all, the criterion of his physician's success. It matters little how the end is achieved so long as it is achieved, and the person converted from a burden to a burden-bearer in society. While we prefer that the means employed should be *secundem artem*, our choice must be determined rather by the belief that such means are most likely to secure the end, than by any considerations of their "regularity" or "irregularity," in the accepted, though somewhat vague, signification of those terms.

That it is not all of the practice of medicine to make a diagnosis and to prescribe drugs for the correction of the pathological condition thus determined, is a statement which none but the most superficial tyro will call in question. Too many wrecks strewed along the shore, and too many water-logged crafts laboring hard in the stream, bear testimony to its truthfulness. Besides having all knowledge of the changes induced in the tissues by disease, and of the physiological action of drugs, he who is most successful in assisting struggling nature to restore that state of equilibrium in the vital forces which we know as health, must have a knowledge, either acquired or instinctive, of those forces in man of which neither the schools nor the books take proper cognizance. Besides the possession of this knowledge, the successful physician must, moreover, have in him

the power to place himself in harmony with them, so that he may direct them in their effective channels. It is he who is thus endowed that "lifts his patient up," whose visit is in itself more potent than the potion he prescribes, and whose influence goes with that potion, making it do better service when given by him than when it is given by the ultra-scientific physician, who regards his patient as but an animated machine of wonderful complexity, which he understands in its minutest structure.

The successful physician may or may not be a man of imposing stature and fine presence; he may or may not be of affable disposition and winning voice; he may or may not be profoundly educated in medicine and its collateral branches. The physician may have all of these qualifications and still not be a success as a practitioner, although, of course, most apt to be; he may have none of them and yet not be a failure, although, of course, very apt to be. If, then, these qualifications do not necessarily ensure success in its highest degree, what is the *sine qua non?* It is found in the physician's personality, in his power of entering into the feelings of his patient, to inspire confidence and to awaken that hope which, while consciousness lasts, buoys and sustains the sufferer while he is in the deep waters. Holmes declares the great success of every form of quackery, to be hope kept alive in the patient; while the too fatal gift of science is a prognosis of despair. There are some physicians who persistently look on the dark side of the case, and are constantly apprehensive of danger. The elevation of a degree of temperature excites in them grave alarm, the presence of a moist râle fills them with gloomy forebodings, and their lugubrious looks act as a wet blanket on the sick man. Their patients recover, when they do recover, largely in spite of their assistance. How different is the effect of a a visit from such a one to that of the physician who looks only for the favorable indications, and who finds in the slightest favorable sign an offset for a great deal that is unfavorable! In the one case the patient is disheartened and depressed; in the other, he is enlivened, and summons his flagging powers for another effort. In the one case the despondency weighs him down; in the other, hope and courage help the struggling vital powers to bear their heavy burden. In the one case the influence causes a settled gloom; in the other it irradiates with light.

But while counselling the cheerful countenance, the joyous temperament and the hopeful demeanor in the physician's relations with his patient, we do not forget that these qualities may degenerate into a flippancy, and encourage a superficiality which is painfully out of keeping with the prudence and caution which characterize the successful physician. It is morally wrong to deceive either the patient who is hopelessly sick, or his friends, with false hopes. As long as there is a chance for struggling nature's final success, she should have all possible assistance, from within and without; but when at last it is evident that she cannot succeed, the physician owes it to his own reputation, as well as to the patient and his friends, to give a prognosis strictly in accordance with the condition as it actually obtains. The ability to detect this condition and to give this prognosis comes from education, experience and careful observation.

### Information From Unscientific Sources.

THE communication from a "A Constant Reader" on another page of our present issue, while covering a subject to which we have ourselves frequently referred, does so in a manner calculated to arrest renewed attention. It is only the sciolist who maintains that man has succeeded in unearthing all of the provisions against disease, or even the most valuable portion thereof. Until a remedy has been discovered for the relief of each one of the numerous ailments of the flesh, the search for that remedy should be a bounden duties of those who take upon themselves the mission of the healer. This search may lead them, at times, through much rubbish, but experience has demonstrated that our most valuable gems are frequently hidden beneath an unsightly mass of worthless matter. When the profession thoroughly awakes to the fact that the value of a drug resides in the substance itself, and that it is neither enhanced nor depreciated by its source or its associations, a great stride will have been taken toward the improvement of the materia medica. There are, doubtless, a number of valuable substitutes for older drugs among the more recent introductions, which have been denied that investigation and trial which they merit at the hands of the more highly educated portion of the profession, and for no better reason than that they were introduced through unscientific channels. Our correspondent shows the injustice of such treatment, both as regards the drugs themselves and the materia medica which they might enrich to the benefit of suffering humanity.

### A Writer's Name Wanted.

WE have received a manuscript article covering four and a half pages of foolscap, in which the writer prefaces an account of the action of sierra salvia in his hands, with some general remarks on the physiological and empirical use of drugs. He has, however, neglected to attach his name, and we are thus unable to publish it. Will he please supply the omission? We shall then take pleasure in inserting it in our next.

## EDITORIAL ABSTRACTS AND ANNOTATIONS.

### The Successful Treatment of Phthisis, by Yerba Santa, etc.

Such is the almost universal opinion in the profession touching the curability of phthisis, that an article bearing such a heading as the above will be very apt to be thrown aside in disgust, and the party writing it voted a misguided enthusiast, or something less complimentary. The heading is, however, the title of a paper read before the Medical Section of the American Medical Association, at the meeting of that body in Washington, commencing the 6th ult. The writer thereof was Dr. P. Miller, of Buckhannon, West Virginia, who wrote from experience gained in a locality in which phthisis prevails extensively. His positive, claims, together with his recognized standing in his profession, entitle his paper to a careful perusal. Omitting his introductory, in which he discusses, briefly, certain points of pathology, we

give the following abstract of the portion devoted to therapeutics. The part which refers to the action of yerba santa will, we think, be read with unusual interest, confirmatory, as it is, of abundant though less positive testimony to the properties of this newer addition to the materia medica, which has appeared in current periodical literature during the past few years:

By reason of his success in the treatment of phthisis, Dr. Miller places himself in opposition to the common belief that phthisis is an irremediable disease.

In phthisis florida, the temperature usually ranges from 104° to 106°. The stomach will seldom bear the more potent antipyretics. Salicylate of sodium he has found serviceable oftener than any other. It may be given in doses of from fifteen to twenty-four grains. When there is diarrhœa one-fourth or one-half of a grain of morphine may be combined with each dose. It should be given during the remission of the fever and shortly before the exacerbation.

When there is anorexia he permits small doses, (about a teaspoonful) of whiskey, with a bitter, as prunus virginiana or nux vomica, but never fails to impress his patient with the fact that whiskey is not antidotal to pulmonic degeneration.

Nausea and vomiting are often obstinate and very perplexing. To relieve this condition he usually begins with:

℞ Acid. carbolici, ʒ i.
Tinct. iodinii, ʒ ij.

M. Sig. Three drops in water before food, three times a day, or:

℞ Strychniæ, gr. j.
Acid. nitromuriat. dil., ʒ ss.

M. Sig. Four to eight drops, given as above.

Again, Fowler's solution in doses not exceeding three drops, given as above, will often do good service. Three to six drops of deodorized tincture opium should be added to each dose when there is diarrhœa. Sinapisms over the pit of the stomach are necessary in very obstinate cases. Pepsin after eating, the potency of which is increased by giving hydrochloric acid before meals, will assist in establishing digestion.

Having subdued pyrexia, allayed nausea and overcome anorexia, an enormous leverage has been obtained for the direct treatment of the lungs. If caseous or tuberculous formations have invaded the alveoli or parenchyma of the lungs, do we possess means to procure softening, absorption and extrusion? Under favorable circumstances, yes. The remedy of first value is yerba santa. In typically bad cases, he has seen such remarkably good effects from its use as to warrant this answer. He attempts no explanation of the rationale of this action, for the resulting benefits are empiric facts, which must be taken on trust.

As a solvent of tubercular and caseous deposit in the lungs, he declares yerba santa has no equal in our materia medica. It is a laxative and in the early stages of phthisis, while there is gastro-hepatic torpor, duodenal catarrh with accompanying irregularity or inaction of the bowels, it is all that is required, and yet its mildness of action does not prevent its use in more advanced cases where the bowels are moderately lax. Diarrhœa must, of course, first be checked.

He declares that he has repeatedly observed in cases of pyrexial phthisis, when every conceivable antipyretic means failed to make any impression, the free and continuous use of yerba santa bring a temperature of 105° down to 99° in less than a week, the patient complaining of sweating too freely all the time.

Night-sweats lower temperature, and until the subsidence of pyrexia, they should not be stopped by the usual means, as continuous diapedesis brings down fever. Yerba santa will produce such perspiration during waking hours that patients will no longer have cold night-sweats. When the temperature is normal or subnormal, and owing to loss of power of the vaso-motor system, the patient has night-sweats, picrotoxin, or strychnia and atropia, will be efficient and proper.

Counter-irritation is always necessary. When the patient is weak and anæmic, it may require courage to subject him to the depletion of a vesicant; but Dr. Miller's observation warrants him in saying that blisters and every relay of blisters will cause the physician to exult over his pluck. The more abiding its issue, the more marked will be its good effect.

During incipiency, before the thermal rise is great or when it is waning, the removal of the exudation will be greatly facilitated by the use of iodide of iron and cod-liver oil. The best way of administering this is with extract of malt. This has a well-known advantage in those tainted with scrofula.

Where the alveoli are being invaded by an extension of catarrh of the bronchi, as a sequel of rubeola, scarlatina, pertussis, or a succession of deep colds, he likes the effect of the iodide and carbonate of ammonium, and gives it in the following form:

℞ Ammonii iodidi, ʒ j.
Ammonii carbonatis, ʒ jss.
Syrupi tolu,
Aquæ, ȧā ʒ ij.

M. Sig. A teaspoonful every four hours.

The two forms of phthisis which offer nothing but discouragement were then described: one occurring shortly after pubescence, in sallow, anæmic subjects of a decidedly phthisical dyscrasia, the stamp of patrimony; the other, a slow insidious form, peculiar to women, unbalanced by chronic uterine ailments.

Finally, being called upon for help by a subject of phthisis, we should be fully alive to the fact that he is closely besieged by death. Beyond the immediate redoubt of therapeutics, we must reconnoitre and sentinel with sleepless vigilance, the environment. Undue anxiety of friends, the superstitions of neighbors, the allurements of the advertising charlatan, and the wily and wise nihilists, both in and out of the profession, bring influences to bear on our patient that operate like a Gatling against us, and we may be vanquished.

Concluding his interesting paper, Dr. Miller ventures the following optimistic prophesy: "Time and other observers may reverse the verdict, but I cannot help feeling that, these adverse influences successfully guarded against, conjoined with the remedies and methods herein recommended, boldly, skillfully and persistently applied, will prove the means for the fine achievement of curing a high per cent. of that form of thoracic degeneration which has hitherto baffled our science and is a standing opprobrium to our profession."

### The Treatment of Eczema.

Dr. Louis A. Duhring, in the course of a series of lectures on dermatology, delivered before his class in the University of Pennsylvania, and reported in the Medical News, discusses the subject of eczema, which he defines as "an acute or chronic inflammatory, non-contagious disease of the skin, characterized at its commencement by erythema, papules, vesicles or pustules, or a combination of these lesions, accompanied by more or less infiltration and itching, terminating either in discharge with the formation of crusti, or in desquamation." This affection he says is popularly known as *tetter*. We cannot but regard his acceptance of this popular term as a synonym for eczema, as unfortunate; it is misleading. While it may be thus synonymous in some sections it certainly is not so in all. Within the limits of our practice, *tetter* and salt rheum are the popular synonyms for psoriasis.

Dr. Duhring recognizes four varieties of eczema: E. erythematosum, E. vesiculosum, E. papulosum, and E. pustulosum. There are also certain subvarieties: E. rubrum, E. squamosum, E. fissum, and E. verrucosum.

Eczema is the commonest of skin diseases, constituting upwards of 40 per cent. of the whole, according to observations at leading clinical centres. It is liable to be confounded with certain other of the dermatoses and care is always necessary in diagnosis. It is a curable disease and requires both local and constitutional measures. Among constitutional remedies saline aperients are important, to which in the case of children, rhubarb may be profitably added. Diuretics are also sometimes indicated, as acetate of potassium, the carbonate of potassium and liquor potassæ. Tonics, as iron, quinine and arsenic, and cod-liver oil must also be given in many cases. Arsenic, our most valuable remedy, must be given with discretion. Two-minim doses of Fowler's solution will be found large enough, and the remedy must be continued for some time. It is best adapted to chronic cases, and is seldom or never indicated in the acute variety.

Local treatment is important and is always demanded. The variety of the disease should be taken into consideration, also the amount of surface involved, the region, the duration, and the history. In the erythematous variety, usually met with about the face, much benefit may be derived from the use of lotions of carbolic and boracic acids. The former is of particular value, and may be thus used:

℞ Acidi carbolici, ʒ ss.
Glycerinæ, gtt. xv.
Alcoholis, f ʒ j.
Aquæ, f ℥ iv.

M. Sig.—Lotion. Apply several times a day.

The following lotion of prepared calamine and oxide of zinc is also recommended:

℞ Calaminæ præparatæ, ʒ ss.
Zinci oxidi, ʒ ss.
Glycerinæ, f ʒ ss.
Aquæ calcis, f ʒ iv.

M. Sig.—Shake before using. Apply as a lotion three or four times a day.

Or the compound sulphide of zinc lotion, made as follows:

℞ Zinci sulphatis,
Potassii sulphureti, ää ʒ ss.
Aquæ rosæ, f ℥ iv.

M. Sig.—Apply twice a day for ten minutes each time.

In the vesicular variety, in the acute stage, excellent results will often follow the use of black wash followed immediately by oxide of zinc ointment. Oxide of zinc ointment is a valuable, mildly stimulating, drying ointment, and is useful alone and also in combination with other remedies. Of the various dusting powders, the following is one of the best:

℞ Talci veneti, ʒ iv.
Zinci oxidi, ʒ j.
Amyli, ʒ iij.

M. Sig.—Dusting powder. Apply freely.

Salicylic acid, ten or fifteen grains to the ounce of lard, and oleate of zinc, one drachm to the ounce, do well in some cases. The calamine lotion above referred to is also valuable in the vesicular variety.

Papular eczema, as a rule, requires strong lotions. Among the best is one of carbolic acid as follows:

℞ Acidi carbolici, ʒ iss to ℥ iij.
Aquæ, Oj.

M. Sig.—Use as a lotion several times a day.

Thymol, one to three grains to the ounce of water, may also be mentioned; and liquor picis alkalinus, the formula for the latter being as follows:

℞ Picis liquidæ, f ʒ ij.
Potassæ causticæ, f ʒ j.
Aquæ, f ʒ v.

M.

This is to be diluted with water in the strength of one drachm to two or four ounces of water. The liquor carbonis detergens, or alcoholic solution of coal-tar will be found serviceable.

Strong sulphur ointments are also sometimes very valuable.

In the pustular variety, ointments of calomel, white precipitate, and sulphur, from one scruple to drachm to the ounce of lard, may be recommended. In the squamous variety, tar is the most valuable remedy, and may be used in the form of the oil of cade, one or two drachms to the ounce of lard, or in the form of the officinal tar ointment, or as the liquor picis alkalinus, mentioned above. Ammoniated mercury, fifteen to forty grains to the ounce, may also be mentioned as serviceable. Where large surfaces are involved, a remedy like tar should first be tried on a small patch, to determine whether it will agree.

In eczema rubrum of the leg, the rubber bandage may frequently be used with benefit. In concluding the subject of treatment, it may be added that there is no one remedy which can be positively relied upon to effect a cure in a given case, especially where the lesions are extensive.

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### Syphilis Treated With and Without Mercury.

In an article on this subject, in the Journal of Cutaneous and Venereal Diseases, for May, Dr. Schuhmacher, Jr., resident physician in Aachen, Aix-la-Chapelle, Germany, gives certain conclusions of that eminent syphillographer Diday, of Lyons, which he (Dr. S.) makes the guide to his treatment of syphilis. Diday recognizes two types of syphilis—a decreasing and a progressive. In the former he avoids specific, and relies on hygienic remedies; in the latter he places his trust in mercury or iodine and hygiene. His conclusions, from a tabulated report of seventy-four cases treated, are given in the form of answers to a series of questions which he propounds:

(1) Does mercury, given on the appearance of the

chancre, prevent the appearance of the secondary symptoms?

No, judging from the results of his observations.

(2) If mercury does not prevent the breaking out of the secondary symptoms, does it not at least weaken the further progress of syphilis?

The success of the expectant treatment, and that of the treatment with mercury, immediately after the appearance of the chancre is the same in both cases.

(3) Is mercury as powerless against relapses, as it is powerless to prevent the first breaking out of the secondary symptoms?

Although Diday for many years has proclaimed the inefficacy of mercury, and although his cases mentioned in previous years proved now and then the failure of mercury as a curative agent, yet it did not prove this failure to be a general rule. Nor do his present statistics appear to him to justify as decisive an answer to this as to the two previous questions. Nor do they include any clinical facts which could be a support to his adversaries; although, indeed, the comparison of the history of the disease now demonstrated by him shows, as regards the gravity of the symptoms, an almost absolute resemblance between the relapses which appear after a longer or shorter treatment with mercury, with those in which an expectant, hygienic treatment had been used.

For twenty years Diday has maintained the view that there is a consistency between the gravity of the first general appearances, that is of the primary and secondary symptoms, and the gravity of the later symptoms of syphilis. The eruptive form (erythematosa) of the first syphilide, promises a quicker decline, and is easier to control; syphilis which appears immediately with papulous exanthemata presages, besides a long duration, a deeper infection of the organism, and then iritis, onychia, and dysphonia are to be foreseen. Finally, the squamous and pustular forms are followed by persistent and severe headaches, by persistent sleeplessness, and, after short duration, by purulent processes, impetigo, ecthyma, and rupia.

The old maxim as to syphilis is entirely wrong—"Nimium ne crede colori." On the contrary, the color of the first breaking-out is our best guide. The darker it is, the worse the prognosis.

Diday considers syphilis in most cases a mild disease, and concludes, for the benefit of the practitioner, that mercury should be given only in cases which at the beginning threaten a severe course, and in which the secondary and tertiary manifestations are of an aggravated form. It is useful in such cases to soften the severity of the outbreak.

The works of Diday thus show that, besides the necessary and important regard for hygiene, mercury is with him the principal remedy in the treatment of of syphilis, as soon as the disease takes a serious form, whether it be in the secondary or in a later stage. Although he makes many dialectic turns, in diplomatic style, to find fault with mercury, his tables prove that he, in most cases, resorts to mercury as soon as the secondary symptoms make their appearance.

He may by no means be counted among the antimercurialists, as one might be led to believe, from some of his utterances.

It is Dr. Schuhmacher's belief that, in syphilis appearing with severe symptoms, the application of mercury in the form of embrocation or inunctions of the blue ointment will, above all others, give the physician the best results.

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### Treatment of Orchitis, Mechanically and with Pulsatilla.

Dr. H. M. Lawson reports (Southern Medical Review) good results from the following procedure in the treatment of inflammation of the testicle:

"Take a piece of cheap, thin homespun, about three and a half inches long and three-fourths of an inch wide; double it the long-way and sew the edges together; then fill with cotton, not too tightly; sew a button on one end and make a button-hole in the other; this, when buttoned, will form a ring. All that is necessary in addition to this is a piece of the same kind of homespun four inches square. Apply as follows: Put the centre of the square piece of cloth to the centre of the swollen testicle below, bring the edges and corners up around, completely inclosing it, then button the ring around above the testicle, which will hold it in position. Now draw upon the edges and corners of the square piece all around until sufficient compression is made. The sound testicle is to be left above the ring.

If too much compression is made, it is easily removed by drawing the cloth in the opposite direction: it is easily increased or diminished at will. Its other advantages will be apparent on using it. Easily obtained, applied, and adjusted, I feel sure that no one who tries this method will afterwards use any other."

In this connection we take the opportunity of reporting our experience with pulsatilla in a recent case: A gentleman suffering from a slight stricture and a gleety discharge, was attacked with epididymitis and orchitis. His social condition made it a delicate matter for him to consult his family physician, and he allowed himself to be treated by a friend who had been "through the mill," and who prided himself on his ability to "fix these things better than any doctor." Rest in bed and the application of an infusion of golden seal, the treatment administered, did not, however, check the inflammation, and we were consulted. The testicle was immensely swollen, the scrotum being tense and shining from its pressure. Here was an opportunity to test the claims recently made for pulsatilla in small doses in this affection, and we ordered two drops of the tincture to be taken in a little water every two hours. The effect was apparently magical, the scrotum becoming wrinkled and the pain and tenderness subsiding so soon after the third dose, that we were skeptical as to the effects of the medicine, being inclined to regard the subsidence of the inflammation as a co-incidence occurring in the course of the natural history of the affection. An opportunity soon offered, however, to verify the action of the pulsatilla. After the patient had fully recovered and had been attending to his business for a week, the gleety discharge still continuing, the other testicle was attacked, and when we saw the case the inflammation was well developed. Two drops of tincture of pulsatilla were ordered as before, the scrotum placed in a suspensory bandage and the patient instructed to continue his business. The

course of the inflammation was promptly checked, the pain subsided and recovery was complete in two days.

### Antipyretic Treatment.

In an article on this subject in the April no. of the Edinburgh Medical Journal, Dr. John Haddon expresses a doubt as to the baneful effects of high temperature in fevers—the very symptom which, because of its supposed destructive action, it has been the aim of the physician to allay. He maintains that although the accepted views on this question are based on the "authorities," who have reiterated them in text-books and periodicals for many years, they are mere assumptions and so insusceptible of proof that even attempts to prove them have not been ventured. The fact that the mortality of typhoid fever, for instance, has been reduced since the introduction of the antipyretic treatment, does not, in his opinion, prove the value of this treatment, any more than the fact that the expectant treatment of pneumonia was proved to be correct because the death-rate under its employment was lower than that which occurred under the severe antiphlogistic measures which were formerly in vogue. Before antipyretic treatment was introduced drugs were mainly relied on, while subsequently, the drugs being discontinued, the the stomach and digestive tract were undisturbed and thus left in a condition the better fitted to digest and appropriate the food necessary to amend the destructive action of the fever.

Notwithstanding his views on the question of the harmfulness of a high temperature, Dr. Hadden nevertheless believes in the beneficial action of the external application of cold water, which action is due not to its abstraction of heat but to the shock which the immersion gives the system. To secure its best results the water must be applied by affusion and not by immersion. It will be remembered that Currie's treatment consisted in douching his patients with cold water and not in immersing them as has been the fashion of later days. Dr. H. reports several cases in which the pouring of cold water from a pail over the shoulders of scarlatina and typhoid patients whose symptoms made a gloomy prognosis, was followed by most gratifying effects, and gave such relief that the patients prayed for its repetition.

Dr. H. concludes that there can be little doubt that in paying attention to the temperature to the neglect of the pulse and other symptoms, we are not likely to advance our knowledge of the febrile process or guide our patients to recovery so well as we might otherwise do.

### Sea-Sickness and its Prevention.

Naupathia is the bête noir of the people who go down to the sea in ships, and the ingenuity of man has been taxed for remedies for its relief. The affection has been approached on all sides, by those who would discover the weak spot at which it might be successfully attacked, but as yet the efforts of the scientific investigator and therapeutist have been productive of scarcely more satisfactory results than have those of the empiricist. To review the remedies which have from time to time been suggested would be to go over a very large section of the materia medica. The latest for which confidence is asked is coffee. It is not intended to imply, however, that coffee has never before been suggested. It is now advocated by Dr. J. Henry Bennett in a communication to the Lancet. The benefits which he claims for it are through the time and method of its giving. Given one hour before embarking, a sufficient time to ensure its absorption, a cup of very strong coffee will, he assures his readers, ward off sea-sickness. It is essential that the coffee be pure and not adulterated with chickory, and that the infusion be strong and taken without milk. The strength which Dr. B. prescribes is an ounce-and-a-half of pure coffee powder infused in four ounces of boiling water, for ten minutes. To obviate exhaustion a good meal of easily digestible food should be taken about four hours before embarking.

Dr. Bennett ascribes the beneficial action of the coffee to its action on the nervous system, acting as a brain and nerve tonic and strengthening the sympathetic, thus rendering it less impressionable to liquid shocks. The influence of the infusion lasts for eight or ten hours, previous to the expiration of which another draught similar to the first, should be taken. For short journeys he regards the remedy as infallible, but does not vouch for its absolute certainty in long journeys. Should sea-sickness develop in the latter case, in spite of the coffee, which it sometimes will, he advises the rectal injection of 15 to 20 drops of laudanum in an ounce-and-a-half of warm water. If not retained it may be repeated in half an hour. The absorptive function of the stomach is suspended in sea-sickness and it is useless to give medicine *per os* under those conditions. The rectum does not become sick nor loses its power of absorption.

### Phosphorus in Rickets.

The deficiency of the phosphates in the bones of rickety subjects, very naturally suggested the administration of the various salts with phosphoric acid as a means of supplying the want. Experience has, however, shown that such salts given to the patient, do not find their way to the desired location in the system in sufficient quantity. They are decomposed before they reach their destination and are eliminated, principally, perhaps, through the kidneys. Quinine has been administered with the effect of diminishing the excessive deposit of the phosphates in the urine, and experience has proven it to be a valuable medicine in rachitis. But something more is necessary. Dr. Kassowitz, of Vienna, makes a renewed claim for phosphorus as supplying the want. He has concluded a series of experiments on the bones of living animals, and on those of rickety children, from which he is led to declare that phosphorus had not been properly appreciated in rachitis. He gives the drug in olive- or cod-liver oil, in strength of 1:10,000, or about a grain to the pint. Of this the dose is a teaspoonful three times a day. Craniotabes is said to disappear in from four to eight weeks, and the laryngeal spasm becomes less frequent in a few days and disappears in a few weeks. Rachitic symptoms in the thorax and spinal column take a longer time, but even marked lateral curvative in the course of a few months can no longer be detected. Children who have not been able to stand or walk are said to soon acquire the power to do so under this treatment.

While those who have had experience in the treatment of rachitis will not be disposed to take these rose-colored statements without some salt, they will not hesitate, in view of the unsatisfactory results from other methods, to accord it a trial.

### The Local Treatment of Phthisical Cough.

Dr. Quinlan, who will be remembered through his recent commendation of mullein leaves as a remedy in phthisis, contributes to the British Medical Journal, of April 5th, a note on the local treatment of the cough of phthisis. His patient was suffering from chronic phthisical disease of the apices of both lungs. The cough was persistent in spite of internal remedies for its relief, and very annoying. The patient, on his own responsibility, placed some of the finely broken, dried mullein leaves in an ordinary tobacco pipe and smoked them. The relief it brought was prompt and satisfactory. It is stated that he was not a tobacco-smoker.

A correspondent of the Medical and Surgical Reporter, of February 16th, last, relates a case in which a mixture of dried mullein leaves with tobacco, and smoked in a pipe, gave great relief from cough in a case of chronic consumption.

Relief of the cough is sometimes exceedingly desirable in consumption, but there is danger in so doing in some cases. It is both a symptom of irritation and a means of throwing off the waste of the destructive process. In the former case, to relieve it is good treatment; to stop it in the latter is but to mask the trouble, which in the meantime is not corrected. If mullein leaves shall prove to do as these two cases indicate, it will prove a valuable addition to the unsatisfactory list of remedies employed in this condition.

### Danger of Simultaneous Internal Use of Potassium Iodide, and Local Use of Calomel.

This danger is most apt to be encountered in the eye, but it may exist in other localities, although of course, in a much more limited degree. A case reported by Mr. T. Davies Price, in the Lancet, is very illustrative thereof. A little girl suffered from interstitial keratitis for which she had been successfully treated with iodide of potassium and corrosive sublimate internally, and an occasional instillation of atropine. In three months after dismissal the condition of the eyes seemed to demand further treatment, which was the same as previously employed, with the addition of calomel dusted into the eyes to reduce enlarged conjunctival vessels. On the day following the first application a sharp conjunctivitis set in, with injection of the circum-corneal zone and vascular extension to the cornea. In looking for the cause of this complication Mr. P. ascribes it to the formation of iodide of mercury at the point of contact of the calomel with the iodide of potassium carried to the eye by the circulation. He refers to cases reported by others, in which actual sloughing of the conjunctiva was due to the same cause.

### Remedies for Toothache.

When the nerve is exposed in the carious cavity the following paste is used by dentists: Arsenious acid, 3 parts, sulphate of morphia, 2 parts, and sufficient creasote to make a paste. A minute quantity of this introduced into a cavity previously dried with absorbent cotton, and covered with a small plug of cotton moistened with collodion, will usually suffice to destroy the nerve. Care must be taken to prevent contact of this paste with the soft parts, as it causes a painful ulcer.

Dr. J. R. Irwin recommends, in the N. C. Medical Journal, for April, the chewing of cinnamon bark for the relief of toothache. He says that if the bark is of good quality the pain is immediately relieved; that it is equally efficacious with creasote, carbolic acid, etc., without their disagreeable features. It is certainly a simple and an agreeable remedy, and no reader who does not let this note slip from his memory, will fail to put it to the test when the occasion calls for it.

### To Relieve Pain in the Side in Phthisis.

M. Rigaud discusses in the Journal de Therapeutique, the various means for the relief of the pleuritic pains which are so often the cause of severe suffering in consumption. These pains (*point de coté*), are considered as they occur in the later stages of the disease, when they are due to the inflammation caused by the presence of a superficial cavity. They are aggravated by motion of the thorax. The treatment which M. Rigaud recommends for their relief is the application of collodion. After washing and drying the part, a succession of layers of this substance is applied to it by means of a hair brush, until a kind of cuirass is formed, which offers sufficient resistance not to split during movements of the thorax. If a fissure does occur it must be immediately repaired; and if the pain does not disappear, the procedure must be repeated. In most cases almost immediate relief is obtained.

While the mechanical action of the collodion is, unquestionably, of great value, even as the strapping of the chest in pneumonia relieves the "stitch" by giving rest to the part in which it occurs, the benefit is, in our opinion, enhanced by the application of a counter-irritant. As such counter-irritant there is no agent more efficacious, in our experience, than tincture of iodine. There would seem to be no objection to applying this first, and, after its physiological action has been secured, applying over it a coat of collodion. These means of securing euthanasia will not be deemed unworthy of careful consideration by the conscientious physician.

### Eucalyptus Globulus in Whooping-Cough.

The editor of the N. E. Medical Monthly having seen eucalyptus globulus recommended in pertussis, gave it a trial in his practice. He administered it in some twenty-five or thirty cases, and the results were of a very gratifying nature. Its effect was to greatly modify the severity of the paroxysms in every case, and in so abating the symptoms occasionally, that what gave promise of being a very severe attack in its incipiency, turned out to be little more than what is known as a sympathetic cough. These results certainly merit for this agent a trial at the hands of other practitioners, for few will be prepared to admit that the best possible remedy for this affection has yet been employed.

## Book Reviews and Notices.

*Elements of Modern Chemistry.* By Adolph Wurtz (Senator) Member of the Institute, Honorary Dean and Professor of Chemistry of the Faculty of Medicine of Paris. Member of the Academy of Medicine, etc. *Second American Edition.* Translated and edited with the approbation of the author, from the Fifth French Edition. By Wm. H. Green, M. D., Professor of Chemistry in the Central High School, Philadelphia, Member of the American Philosophical Society, of the Chemical Societies of Paris and Berlin, etc. With one hundred and thirty-two illustrations.

London and Philadelphia: J. B. Lippincott & Co. 1884. (All rights reserved).

Detroit: J. MacFarlane. Price, $2.50.

As its title implies, this is an elementary work on the science and art of chemistry. It takes the student at the beginning of his course of study, and carries him through to a finished knowledge of what is known on the subject. The work is kept up with the current of the latest discoveries, and in it are condensed a considerable number of exact and well-selected facts without banishing the theory which binds them together. Thus the origin and foundation of the Atomic theory have been given as far as possible in historical order. The notions concerning atomism, so important for the appreciation of the structure of combinations and for the interpretation of chemical reactions, are presented in an elementary form. The history of the metalloids is relatively more developed than the remainder of the book—being the fundamental part of chemistry, a familiar knowledge of it is indispensable to the fruitful study of the metals and of organic chemistry. It is also the most attractive for beginners, for it is the most easily understood.

The question of isomerism, upon which the theory of atomism has thrown so much light, has been treated in a more thorough manner.

The subject of aromatic compounds has been considerably augmented. Organic chemistry has received marked attention — the cyanogen compounds, hydrocarbons, the acids, particularly azoic and deazoic compounds and the pyridic bases, which have acquired great importance during the past few years.

A short chapter on Chemical Energy, and a brief history of Mendelejeff's Periodic Law have been added.

The Spectrum Anaylsis faces the title page. The book is small, octavo, is handsomely printed on fine paper, clear and clean, has a full index and the illustrations are clean cut. We cannot but indorse it and commend it to schools and beginners as a most valuable work, besides the price is so very reasonable, for so much practical information.

*Brain Exhaustion*, with some Preliminary Considerations on Cerebral Dynamics. By J. Leonard Corning, M. D., Formerly Resident Assistant Physician to the Hudson River State Hospital for the Insane, Fellow of the New York Academy of Medicine, Member of the Medical Society of the County of New York, of the New York Neurological Society, of N. Y. Medico-Legal Society, etc.

New York: D. Appleton & Company, 1, 3 and 5 Bond street. 1884.

Detroit: J. MacFarlane. Price, $1.50.

This is a capital little work on the subject upon which it treats, and the author has presented from as real a scientific standpoint as possible, a group of symptoms, the importance of which is sufficiently vident. The opinions expressed have been formed from direct clinical observation and from inferences derived from physiology and experimental pathology.

To fully comprehend the ideas as presented by the author, the whole book should be read, and as it consists of only 234 pages, index and treatment included, the task would not be a severe or tedious one, and the information or knowledge obtained would be much more than equivalent for the time spent and cost of book included. Literary men and women would do well to procure it, for it is to them the book should have been dedicated. In writing this, we intend no disrespect to the author, or Dr. Hammond, to whom it is dedicated.

*Post-Nasal Catarrh, and Diseases of the Nose Causing* Deafness. By Edward Woaks, M. D., Senior Aural Surgeon, and Lecturer on Diseases of the Ear, London Hospital, Senior Surgeon Hospital for Diseases of the Throat, London. Illustrated with wood engravings.

Philadelphia: P. Blakiston, Son & Co., 1012 Walnut street. 1884.

Detroit: J. MacFarlane. Price, $1.50.

It is an old adage, "It is useless to kick against the pricks," or we would at once take exceptions to the word "catarrh" as used by the author, but which can be used as a synonym for congestion and inflammation, and even for dryness, as exemplified in a condition spoken and written of as "dry catarrh." We must subside and accept the situation. In the early days of our medical education, we were taught that catarrh was a flow or discharge from a mucous membrane and we know Dunglison so defines the word. We also well remember when empirics and patent medicine men seized upon this disease, magnifying its importance, and named every condition of the nasal organs and fauces a catarrh. It was a fruitful field for them to cultivate. The medical profession combatted them as best they could; but when the *specialist* came to the front, he too took up the condition, and named it wet or dry as suited his patient, or his purpose, irrespective of the pathological condition of the parts involved.

Simple hypertrophy of the pharyngeal tonsil is classed among the catarrhs, pages 156 and 157.

However, laying aside our objections to the use of the word "catarrh," there is much of good sense and value in the volume. The author's reasoning from cause to effect, and his deductions therefrom, furnishes much information, and the treatment laid down, if it could be carried out as directed, would doubtless be both serviceable and curable.

The book is both instructive and interesting, and one the profession would do well to read and study.

*Sexual Neurasthenia.*—(Nervous Exhaustion). Its Hygiene, Causes, Symptoms and Treatment, with a chapter on Diet for the nervous. By George M. Beard, A. M., M. D. Formerly Lecturer on Nervous Diseases in the University of the City of New York; Fellow of the New York Academy of Medicine; Member of the New York and Kings Counties Medical Societies; of the American Med. Association; of the American Neurological Association. Author of "Our Home Physician," "Hay Fever," Stimulants and Narcotics," Eating and Drinking, one of the authors of "Medical and Surgical Electricity," etc., etc. (Posthumous Manuscript). Edited by A. D. Rockwell, A. M., M. D., Fellow of the New York Academy of Medicine; of the American Neurological Association, and Electro-Therapeutist of the N. Y. State Woman's Hospital; One of the authors of "Medical and Surgical Electricity."

New York: E. B. Treat, 757 Broadway. 1884.

Detroit: John MacFarlane. Price, $2.00.

The philosophy of this is based on the theory that

there is a very special, and very important, and very frequent clinical variety of neurasthenia (nervous exhaustion), to which the term sexual neurasthenia may properly be applied. The late Dr. Beard, the author of this work, was an enthusiast on this subject, and had his life been spared, he eventually would have developed and systematized his ideas into practical application. Opinions have differed and will continue to differ as to the value of some of his suggestions, and conclusions upon this, as well as upon many other themes with which his thought and pen were constantly busy; but that most of them were original—stamped with his own individuality, and presented in such a clear and lively way as to compel attention—all must agree. The author discusses his subject under the following heads, viz :

1. Nature and Varieties of Neurasthenia.
2. Evolution and Relation of the Sexual Sense.
3. Relation of Neurasthenia to other diseases.
4. Sexual Hygiene.
5. Diagnosis and Prognosis.
6. Illustrative Cases.
7. Treatment of Sexual Neurasthenia.
8. Diet for the Nervous.

Anything and everything relating to the sexual apparatus and its diseases, command attention. The psychical rather, perhaps, that the immediate physical effects which ensue on a derangement, or a fancied derangement, of these organs, are at the root of a large congeries of distinct and indistinct, real and imaginary, ailments. The work which shall succeed in discovering the real nature of actual disease and in exposing the folly of brooding on fancied disease associated with the organs of procreation will be a boon, especially to young men, although young women and even older people, of both sexes, would not infrequently profit by such a work. The author had his special ideas relative to these affections and he has given them, clearly and succinctly, in the book before us. Whether he is right or wrong, time and observation will determine. We are only sorry his life was not spared to learn practically the results of his theory, and to carry it out to its fullness. It is an interesting book to read. Much good can be learned from it, and we recommend it to every intelligent physician to read it.

*Transactions of the New York Medico-Chirurgical Society*, 1883.

While the Society, of whose meetings the beautiful volume of 163 pages before us is a report, has no distinctive name, it is apparent from its published papers and discussions, that it is composed of gentlemen who believe in the dominance of the law of *similia similibus curantur* in therapeutics. It is also apparent, however, that these gentlemen are educated and intelligent. They are not bound hand and foot by this dogma, nor are they slaves to infinitesimal dosage. Perhaps it is not the proper thing to classify such gentlemen as homœopaths, and more especially so when they themselves have dropped the distinctive appellation. A homœopath is ruled by his dogma, and when he yields the point that that dogma is not universally applicable as a guide to therapeutics, he ceases to be a homœopath. The gentlemen of the N. Y. Medico-Chirurgical Society have, therefore, been eminently consistent in dropping the title and taking their stand on the broad platform of the physician.

## New Remedies.

**Some African Kolas, in Their Botanical, Chemical and Therapeutical Aspects.*—Among** the vegetable products of the African soil, there is perhaps none more interesting and valuable than those which under the various names of "kola," "gourou," "ombéné," "nangoué" and "kokkorokou," are used as articles of consumption throughout tropical and equatorial Africa, as equivalent to tea, coffee, maté and cacao. Used under the form of seeds, probably from time immemorial, by the native tribes, these products are of varying botanic origin, and their history has been up to the present time imperfectly known; but the authors have been able to avail themselves of the observations of some recent travelers to clear up some obscure points.

The products which are included by the authors under the name "kola" (the various synonyms quoted being special to particular countries) consist of seeds, yielded by two families of plants and differing very much in appearance. The kind most widely distributed, the "true kola," which by some of the natives is called the "female kola," comes from the Sterculiaceæ; another variety, called by the author "false kola," is known among the negroes as simply "kola," or "male kola." Before the authors' researches only the "true" or "female" kola was known, and it had been ascertained to be yielded by the Sterculia acuminata, P. de Beauv. (Cola acuminata, R. Br.). To this Messrs. Heckel and Schlagdenhauffen are able now to add information concerning the "male" kola, hitherto unknown, and to give reasons for believing that various other species of Sterculia, besides S. acuminata, yield kola seeds.

Dealing first with "female" kola, the authors describe at length Sterculia acuminata from specimens, the description agreeing with Oliver's description of var. *a* (Fl. Trop. Af. i., 220). According to the best information, the tree—which is from 30 to 60 feet high, and in general aspect resembles the chestnut—grows wild upon the western coast of Africa comprised between Sierra Leone and the Congo or Lower Guinea, reaching into the interior about five or six hundred miles, where it appears to follow the limits of the palm. Upon the eastern coast it appears to be unknown in places where it has not been introduced by the English. Dr. Schweinfurth, speaking of the country of the Nyams-Nyams, near lake Nyanza, says that among the imposing forms of vegetation a Sterculia of the kola kind predominates and is called locally "kokkorokou." In the country of the Momboutous (24° E. long., 3° N. lat.), too, upon asking for kola he was supplied with the fruit, in its rose-colored envelope; but the only information he could obtain there concerning it was that the nuts were found in the country in the wild state and were called "nangoué" by the natives, who chewed slices of it whilst smoking. Karsten, in his "Flore de Colombie," describes the plant as growing wild in the moist hot woods near the southern coast of Venezuela, but the authors believe it was probably introduced there about the same time as it was introduced into Martinique, and that it was sown by African negroes, who brought it into those countries in the same manner as they are known to have introduced S. cordifolia for the sake of its delicious fruit. It has also been introduced successfully by the English in the East Indies, the Seychelles, Ceylon, Demerara, Dominica, Mauritius, Sidney and Zanzibar, and by the French recently at Guadeloupe, Cayenne, Cochin China and the Gaboon. In all these stations the kola tree flourishes best in moist lands at the sea-level, or a little above. At Sierra Leone some fine

* Abstract of a lengthy memoir read before the Union Scientifique des Pharmaciens de France by E. Heckel and F. Schlagdenhauffen. (Journ. Pharm. et de Chimie, [5], vii, p. 553; viii, p. 81, 177.

trees are found at an elevation of 200 to 300 metres, but not higher than that.

The kola tree commences to yield a crop about its fourth or fifth year, but it is not until about its tenth year that it is in full bearing. A single tree will then yield an average of 120 lbs. of seeds annually. The flowering is nearly continuous after the tree reaches maturity, so that a large tree bears flowers and fruit at the same time. There are two collections; the June flowering yielding the fruit in October and November, and that of November and December in May and June. When the fruit is ripe it takes a brownish yellow color. In this condition dehiscence of the capsule commences along the ventral suture, exposing red and white seeds in the same shell. It is at this period that they are gathered. It has been stated that there exist two varieties of kola, one yielding exclusively red seeds and the other white; but the authors have been repeatedly assured that this is not the case, and that one and the same capsule may contain fifteen seeds varying considerably in size, white and red together, without the white being considered less ripe than the red The carpels are from 6 to 9 centimetres long and 3 to 5 thick and the spongy pericarp is about 2 or 3 millimetres thick. As many as five or six ripe carpels may result from a single flower, and these may each contain from five to fifteen seeds; but sometimes carpels are met with containing only a single seed. The seeds removed from their envelope weigh, according to their development, from 5 to 25 or 28 grams. The epiderm is the principal site of the coloring matter, and beneath it the cotyledonary tissue consists of a mass of cells gorged with large starch granules comparable to potato starch. It is in these that the alkaloids caffeine and theobromine are found in the free state.

The collection is conducted with great care and is made by women. The seeds are removed from the husk and freed from the episperm. In order to maintain their value among the negroes it is necessary to keep them in a fit state and in good condition. They are, therefore, carefully picked over, all damaged and worm-eaten seeds being removed, and the sound seeds are then placed in large baskets, made of bark and lined with "bal" leaves (Sterculia acuminata, Car., or S. heterophylla, Beauv ?); the seeds are heaped up and then covered over with more "bal" leaves which, by their thickness, resistance and dimensions, contribute not a little to the preservation of the seeds by keeping them from contact with dry air. Packed in this manner the seeds can be transported considerable distances, remaining free from mould for about a month, during which time it is not necessary to submit them to any treatment in order to preserve them fresh beyond keeping the "bal" leaves moist. But if it be desired to keep them beyond that time the operations of picking and re-packing have to be repeated about every thirty days; the seeds being washed in fresh water and fresh "bal" leaves placed in the baskets. The baskets usually contain about 3 cwts. of seeds. It is in this condition that "kola" is sent into Gambia and Goree, where the principal dealings in the seeds are carried on. In Gambia they are sold in the fresh state to merchants traveling with caravans into the interior, who dry them in the sun and reduce them to a fine powder, which is used, mixed with milk and honey, by the tribes of the interior to make a very agreeable, stimulating and nourishing beverage. It most frequently arrives at Sokota and Kouka in the Soudan and Timbuctoo, where large sales of the seeds are made, in the fresh condition; from the Soudan markets it is carried by caravans to Tripoli, and from Timbuctoo into Morocco. As might be expected the value of the Kola increases as it makes its way into the interior of Africa, and the authors state that some of the tribes furthest removed from the sea pay for the dry powder with an equal weight of gold dust. Kola plays an important part in the social life of many of the African tribes, and the authors mention some of the occasions upon which it is used in terms almost identical with those in a paper read at an evening meeting of the Pharmaceutical Society eighteen years ago (Pharm. Journ., [2], vi., 450). An interchange of white kola between two chiefs is indicative of friendship and peace, whilst the sending of red kola is an act of defiance. An offer of marriage is accompanied by a present of white kola for the mother of the lady; the return of white kola is equivalent to acceptance of the suit, whilst red means rejection. The absence of a supply of kola from among the marriage presents would endanger the whole arrangement. All the oaths are administered in the presence of kola seeds; the negro stretches out his hand over them whilst he swears and eats them afterwards.

Fresh kola is used as a masticatory, as is also the dried powder, by the tribes in the interior. When fresh the taste of the seeds is first sweet, then astringent and finally bitter. When the seeds become dry the bitterness diminishes, giving place to a sweeter flavor; but upon steeping them in water for a couple of days the original bitterness is nearly restored. Preference is given for mastication to seeds containing only two cotyledonary segments, it being asserted that they are less rough than those with four to six segments; but the authors did not find anything in their chemical examination to explain this preference. The practice of kola mastication, which is always accompanied by the swallowing of the saliva, does not injuriously affect the teeth, as is the case with the betel nut, but tends to render the gums firm, and exercises a tonic influence on the digestive organs. The seeds are reputed to clarify and render healthy the most foul waters, and to render tainted meat edible, and when chewed, either fresh or as a dry powder, and the saliva swallowed, to be a sure preventive against dysentery. They are also said, like erythroxylon coca, to possess the physiological property of enabling persons eating them to undergo prolonged exertion without fatigue, which is probably to be attributed to the caffeine they contain. Further it is said that kola exercises a favorable influence upon the liver, and that white people, living in those regions, who chew a small quantity before meals escape constitutional changes due to affections of that organ. They are also believed by the negroes to have aphrodisiac properties. With respect to the assertion that the pulp or powder of the seeds thrown into foul water has the property of cleaning it, an experiment made by the authors would appear to show that any action in this direction would be due to the formation of a kind of mucilage, which would act mechanically like the white of an egg.

It has been pointed out that the name "kola" is applied in Africa indifferently to several Sterculaceous seeds other than those of the two varieties of Coca acuminata, although these are the most valued in the native markets. It is probable that the African plants capable of yielding seeds resembling the true kola or Cola Duparquetiana, Baill., C. ficifolia, Mast., C. heterophylla, Mast., C. cordifolia, Cax., and perhaps Sterculia tomentosa, Hend. But the authors think it doubtful whether these seeds contain caffeine, otherwise they would be as much sought after as the true kola.

In order to determine chemically the composition of kola seeds, the authors made a large number of experiments; the details fill many pages in the original paper. The dry seeds were first operated upon, and the process which appeared to give the best results was to exhaust the dried powder successively with chloroform and alcohol. The chloroform percolate was a yellowish liquid; this was evaporated to dryness, and the residue treated with water, which separated a fatty substance with an odor recalling that of cacao butter and entirely saponifiable by caustic potash. The yellow liquid upon concentration after filtration, deposited silky needles of caffeine, but when the solution was rapidly evaporated and the residue treated with water, ether or chloroform, it no longer completely dissolved without using a considerable quantity and boiling, and upon such a solution cooling a small quantity of a compound crystallized out in microscopic prisms and octahedra which

proved to be theobromine. The substances separated by chloroform from the dry nuts, were—caffeine, 2.348 per cent ; theobromine, 0 023 per cent.; tannin, 0.027 per cent.; fat, 0.583 per cent.

The kola powder was then dried and exhausted with alcohol. A mahogany colored extract was obtained which when treated with boiling water dissolved entirely, but the solution on cooling deposited a large quantity of coloring matter. The aqueous solution was precipitated with triplumbic acetate, the precipitate decomposed with sulphuretted hydrogen, and a liquid obtained, free from bitterness, containing a considerable quantity of a tannin giving an intense green color with persalts of iron, and a soluble coloring matter that formed lakes in contact with metallic solutions; the residue of the aqueous solution, after removal of excess of lead, was found to contain only glucose and a small quantity of fixed salts. The coloring matter deposited upon the cooling of the boiling water used in dissolving the alcoholic extract differed in its nature from the soluble coloring matter. It appeared to be an oxidation product from the tannin and presented considerable analogy to cinchona red; in order to distinguish it, therefore, the authors have named it "kola red."

The composition of the alcoholic extract from the dry nuts (5.826 per cent.) was found to be—tannin, 1.591 per cent.; kola red, 1.290 per cent.; glucose, 2.875 per cent ; fixed salts, 0.070 per cent.

The entire composition of the kola nut is compared by the authors with that of tea, coffee and cacao as follows:

| | Cacao (Mitscherlich). | Coffee (Payen). | Tea Green (Peligot). | Tea Black (Peligot). | Kola (Authors'). |
|---|---|---|---|---|---|
| Fat | 53 00 | 13.00 | 0.28 | ..... | 0 585 |
| Proteid Matters | 13 00 | 13 00 | 3.00 | 2.80 | 6.761 |
| Theobromine | 1 50 | .. | .... | ..... | 0.023 |
| Caffeine | .. | 2 25 | 0 43 | 0.43 | 2.348 |
| Essential Oil | 0.04 | 0.003 | 0 79 | 0 60 | undct. |
| Resin | .... | ..... | 2.22 | 3.64 | ..... |
| Sugar | 0.5 | 15.50 | ..... | ..... | 2.875 |
| Starch | ..... | | | | 33 754 |
| Gum | ..... | ..... | 8.58 | 7 28 | 3 040 |
| Cellulose | ..... | 34 00 | 17 08 | 26 18 | 20.831 |
| Coloring Matters | ..... | ..... | 17 24 | 19 20 | 2.561 |
| Coloring Matters | 5.00 | ..... | 2 22 | 1.84 | 1.290 |
| Extractive | ..... | .... | 22 80 | 19 88 | ..... |
| Tannin | ..... | ..... | 17.80 | 12.88 | 1.618 |
| Ash | 3 60 | 6.697 | 5 56 | 5 24 | 3 395 |
| Water | 6 00 | 12 00 | ..... | ..... | 11.909 |
| | 100 00 | 100 03 | 00 00 | 100 00 | 100.00 |

These results, it is pointed out, differ somewhat from those obtained by Attfield (Pharm. Journ. [2], vi, 457.) especially in the recognition of the presence of a second alkaloid and of tannin. The proportion of caffeine is higher than that observed in any coffee, or, except in rare instances, in tea, and exceeds that of theobromine in cacao. The alkaloid exists in kola, as in tea, uncombined, but in coffee, according to Payen, it is present as chlorogenate of potassium and caffeine. It is worth mentioning that the authors report the presence of a considerable proportion of caffeine and some theobromine in the pericarp, but the material at their disposal was too scanty for an exhaustive investigation in this direction. The leaves, wood and bark were also examined for alkaloid, but gave negative results. As in the case of coffee, kola undergoes a considerable loss of caffeine (three-fourths) during roasting, while the quantity of essential oil present is augmented.

Some experiments have been made with this kind of kola in the treatment of the atonic diarrhœa to which Europeans are frequently liable in tropical countries. The results have been fairly satisfactory, and through the efforts of M. Heckel the medicine has been supplied to some French colonial stations for a systematic trial. The preparations used are an aqueous extract, an alcoholic extract and a wine. The alcoholic extract is made by exhausting fresh kola with 5 parts of 60° alcohol and the wine by macerating the same proportions of kola in a sweet white wine during a fortnight. Neither of these preparations, however, completely exhaust the kola, at least as far as the caffeine is concerned. The preparation of an aqueous extract presents considerable difficulty in consequence of the quantity of starch, which forms an unmanageable magma.

Concerning the "male kola" or "kola bitter," as before stated, nothing definite was known, and as recently as the year 1882, it was referred erroneously to a species of Sterculia. In the "Flora of Tropical Africa," Oliver says: "The kola bitter of Fernando-Po is the product of trees belonging to the Guttiferæ. The authors were led by this remark to attempt to obtain from various parts of the eastern coast specimens of the plant yielding "kola bitter," and although the flowers did not reach them they received specimens of the branches, leaves and fruits, together with a sufficient quantity of seeds to allow of a complete analysis being made. All the specimens received from various places corresponded in their characters, and showed that the kola bitter is the produce of a single Guttiferous species, and not of several. From the material at their disposal the authors refer it to a new species, Garcinia Kola, Heckel.* The plant is described as a tree of variable aspect, 10 to 20 feet in height, bearing towards the base of the branches large opposite leaves (12 inches long by 7 inches broad,) with short petioles, whilst at the extremity of the branches the leaves are much smaller (5 inches by 2 inches). The leaves are oval, slightly dilated at the base, mucronate at the apex, without stipules, full green on the upper surface and greyish underneath. The fruit is a berry the size of an apple, with a rugose epiderm covered entirely with rough hairs. It presents three or four divisions, each containing a large oval cuneiform seed, rounded on the external and angular on the internal face; the seeds are covered with an abundant sourish yellowish pulp, constituting a true arillus. The fruit has at the base the persistent calyx still adherent to the peduncle, and sometimes the persistent corolla, and at the apex the persistent stigma. The plant is reported to occur all along the eastern coast of Africa and of Senegal, intermixed with the Sterculia acuminata, flourishing under the same conditions, but less widely distributed. In its known characters the plant would appear to be closely allied with Garcinia Morella, which, however, is essentially an Asiatic species. The seeds present one convex and two plane surfaces, the former being towards the circumference of the fruit. They are covered by an apricot-yellow episperm, below which is a large yellowish-white macropodous embryo, devoid of cotyledons, and with numerous depressions on its surface. The tissue is denser and closer than that of true kola and crackles under the teeth; it consists of a compact mass of very homogeneous cellular tissue, interspersed here and there with laticiferous vessels of varying size containing resin, the cells constituting which are filled with starch granules larger than those occurring in true kola.

Upon chewing these seeds a strongly bitter, astringent and yet aromatic taste is perceptible, which is quite different from that of true kola, and approaches in its aromatic flavor that of green coffee; it is this aromatic flavor that is esteemed by the negroes. It is worthy of remark that although the use of these seeds does not produce any notable stimulant effects or ward off fatigue, they are as much sought after and fetch nearly as high a price on the eastern coast as the true kola. In the interior, however, they are unknown. The authors are of opinion that these seeds owe their properties to the resin which they

* The plant yielding "bitter kola" was identified as a species of Garcinia by Dr. Maxwell T. Masters eight years ago, and was partly described and the fruit figured by him in the Journal of Botany for March, 1875.—Editor Phar. Jour., February 2, p. 610.

contain, which is slightly stimulant. By the negroes they are thought to exercise an aphrodisiac action, which the authors consider doubtful, and as a masticatory, they are said to be a valuable remedy for colds.

An examination of fresh male kola nuts for caffeine gave negative results, the chloroform, ether and alcoholic percolates being all free from alkaloid. Besides coloring matter, tannin and glucose, two resins were separated. One of these was brown, hygrometric and soluble in ether, and melted at the temperature of the water-bath; the other was yellowish-white, soluble in ether, alcohol, acetone and acetic acid, insoluble in carbon bisulphide or petroleum spirit, and had a high melting point.

A large proportion of the paper is devoted to a study of the constitution of caffeine and several of its derivatives, in reference to the identification of the alkaloidal substances obtained by the authors from the female kola.—*Phar. Jour. and Trans.*, Jan. 26, 1884.

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**An Experience with Cannabis Indica.**—Having suffered from general neurasthenia for a couple of weeks, and annoyed by pain for which I did not care to take opium or morphia, I took, about 9:45 A. M. of March 5th, just seven and a half (7½) minims of "normal liquid" cannabis indica and twenty-two and one-half (22½) minims of "normal liquid" ergot, samples of which had recently been received from the manufacturers, Messrs. Parke, Davis & Co.

About 10.15 A. M., while sitting in my office, I felt a momentary dizziness pass over me, accompanied by a peculiar *lightness* of the whole body. The sensations were repeated. I laid down the medical journal I was reading, arose from my chair, but again came the phenomena with increased power. I walked up and down the room, experiencing an indefinable nervous depression in addition to the sensations before alluded to. Stamping my foot, I chided myself for allowing this "nervousness" to master my attention. The dizziness increased. I threw myself upon the sofa, thinking to dissipate these feelings by a better supply of blood to the brain. I had before experienced slight vertiginous attacks after prolonged mental work, and was not alarmed. On assuming recumbency the symptoms at once increased, immediately followed by a peculiar and indescribable dread, and general muscular weakness.

Satisfied that I was to experience the peculiar physiological effects of Indian hemp (a vivid description of which I had years ago read, in Dr. H. C. Wood's "Materia Medica," I think), combined with those of ergot, I descended to the dining-room, swallowed half a wineglassful of port wine, but could not the balance, inasmuch as I felt I had only strength sufficient to climb to the second story, where my wife was. Ascending the two flights of stairs with the greatest difficulty, on account of the lead-like heaviness in my legs, it seemed as though at the next step I should fall backward. On entering the room I informed my wife what was to be expected; I was walking about in an aimless, half-dazed way, when she led me to the bed, whereon I threw myself, removing the pillow from under my head. Gradually increasing darkness came on, accompanied by a swimming of my head, a sinking feeling at the præcordial region, a sensation of spasmodic, powerful contractions of all the blood vessels of the body, even of the smallest twigs, and a horrible feeling of impending death. I directed my wife to give me raw brandy, and send for my bottle of liq. atropiæ (Lond.) my object being to antagonize the arterial contraction. Immediately I began moving the right leg up and down, rubbing the foot against the bedclothes very rapidly (my wife informs me I also slapped the bed with my right arm, for a few moments, but I recollect it not), as the motion seemed to be a relief, in partly distracting my attention from the increasing muscular heaviness, rapid action of the heart, and cold waves, which were passing rapidly and in quick succession over my whole body. The motion was wholly voluntary, as, on the entrance of Dr. Davis, I discontinued it long enough to demonstrate it was under control. I explained to him the state of affairs, advised the giving of atropia as an arterial dilator, and was given brandy and ɱij of the solution above-mentioned at his hands. While he was dropping the above my eyelids closed involuntarily, but I did not, even for an instant, lose consciousness. The lids seemed simply to close over the eyes, and I had neither inclination nor power to open them. Next, my breathing became *to me* laborious, as though a great weight were upon my chest interfering with its expansion, as well as an impediment arising from under the sternum toward the larynx.

I should here state that up to just before the arrival of the doctor I had been feeling my pulse, which became so quick and feeble I desisted from further interrogation; being sensible, the knowledge of a failing heart would add nothing to my power of resistance.

Simultaneous with the oppressed breathing (which by the way, Dr. Davis said became very shallow for a while, requiring his admonition to "breathe more deeply," with which instruction I complied and remember), appeared most intense, and awful coldness in the præcordial region, which seemed actually unbearable the instant preceding the application of (almost) scalding hot water, also applied to my forehead and feet, affording, as it then seemed to me, the greatest relief ever experienced by a suffering mortal!

Suddenly a shock, as it may be best expressed, of motor and sensory paralysis passed through my frame; then I was instantaneously introduced to the next stage. How shall I describe it? To say that like an electric flash an unconsciousness passed over my brain, and that cerebration was instantly awakened to three sensations—one, that I was speeding along like the wind in the utter darkness of a broad, interminable tunnel; another, that my body lay cold in death (upon the bed) at which I was gazing as from some spot in the vaie of darkness, while I speculated upon the appearance my corpse presented; the third, a consciousness of what my wife and the doctor were saying. To describe all this but feebly expresses the wonderful triple sensation.

Despite the lightning-like rapidity of these occurrences, my mind had time to soliloquise: "If this be death, 'tis not only devoid of horror and fear, but brings such calm and ease as alone could be vouchsafed mortal by the All-Wise."

The pitch-like darkness gave way to a phosphorescent light, quickly succeeded by the most beautiful and soft lilac shade of misty brightness, lasting sufficiently long for me to exclaim. "Oh! what a beautiful purplish hue?"

Succeeding this came a genuine state of trance, which lasted till 4:30 P. M.

My body seemed to be fashioned from wood. My neck and head were hewn from hickory; my chest and abdomen, of huge proportions, were also wooden, and from my hips my limbs were represented by a log of wood extending an interminable distance along a pathway through woods, the green-leaved trees rising up on either side, and, far above, the clear, blue, beautiful, half-sunny sky seemed to look with benignant glance upon the strange object stretched upon the ground. How queer my carved-from-wood face appeared to my other self, which never for an instant failed to recognize the dual existence, to realize what was transpiring about me in the room, hall, or even the hall below stairs. How extremely funny appeared to my *alter ego* my chest and abdomen, forming a huge barrel. So excruciatingly ludicrous it seemed that, lifting my arm, and crying out: "See how hollow this barrel-stomach of mine is!" I struck out with such force as to make the result anything but agreeable to the part attacked. No sooner had the hand touched my body

than the barrel hallucination disappeared, on removing the hand it reappeared. And my arms, how short they seemed, and how immense my hands! The arms seemed thrust out from and attached to openings in the upper part and sides of the barrel, and felt to be no longer than five inches, or half the length of my forearms. The hands seemed like huge boxing gloves!

Henceforward, till I awoke at 4.30 P. M., I remained in a state of the most hilarious exhilaration and constant volubility. I was contented and happy beyond description, only wishing for indefinite prolongation of this state. My tongue ran upon much nonsense and every imaginable topic. I asked many questions pertinent to happenings of the past and present, and connected with expected events. Then again, I would laugh immoderately at some remark (possibly far from mirth-provoking) of the bystanders, or at my own imaginings. My wife says I cried most piteously for awhile over a matter of the past, present and future which greatly concerns me, but I do not recollect. I was ever conscious of all my foolishness, but had no will-power to exert control. My hearing reached the highest pitch of acuteness; it could locate the slightest noise even in the lower halls; it caused me to feel the presence of members of my family in whatever part of the room or hall they might be. On the entrance of any one my eyelids would fly open, I would raise myself up in bed, and, staring, point my finger as I pronounced the correct name, then fall (or be pushed) back upon the bed, my eyelids closing, and the woody phantasm reappear. Each time (four) I thus opened my eyes all the surroundings appeared natural, even to the snow falling outside, seen through the window, only that I was looking, as it were, through a veil of brilliant ether, for I can in no other words adequately express the appearance. Among others, I had the notion that the extremities of my body were attached to pivots, and that (making the movements with my body sideways) I was swinging to and fro like a baby's cradle. At the same time I realized this was indeed an hallucination.

The atropia I had taken caused such dryness of the fauces, water was given me, and felt as though poured into a long wooden tube, resounding as it touched bottom, instead of into my mouth and throat. The opening of my lips seemed like separating two large blocks of wood (or cork), so immense the labia appeared to be. At 4.30 P. M. I emerged from this state exclaiming: "Why, here I am once more, and everything just as natural as ever. What time is it?" When told, I wondered whence had passed so much time, so short a period it seemed since I went to bed, certainly not more than a quarter of an hour. I was much exhausted, and soon inclined to drowsiness, which I resisted. Intense hunger appeared, but I ate little or nothing. Slept well. Attended to practice the next day, though feeling quite weak and slightly dizzy. On walking the streets, distant objects appeared to be very near, and I imagined myself to be very tall. Both notions disappeared in less than an hour.

Finally, I remember of vomiting once (only) during the reactive (trance) stage, also of relieving my bladder of a goodly quantity of rather light-colored urine. No aphrodisiac effect accompanied or followed the phenomena. In addition to the subjective above described, the objective symptoms, observed by my wife, were, during the stage of depression, icy coldness of the face, head, chest, upper and lower extremities, blueness of the hands, face of marble-like pallor, under lids puffed in the centre like a ridge (spasm of the orbicularis), pupils widely dilated, eyeballs bloodshot, wild look, no convulsions, general or local. Dr. Davis reported that my pulse at once time could scarcely be detected at the wrist, so feeble and rapid it had become.

Remarks—I wish briefly to draw attention to the following points:

1. In practice I have given as many as gtt. xx, and in one case reached gtt. xxxv, at one dose repeated several times a day for several days, of the fluid extract of cannabis indica, with the best effect upon pelvic pain, and no other disagreeable symptom than slight stiffness of the jaw. I know not the make, but certainly it was not that of Parke, Davis & Co.; have given 3-grain doses of Lazell, Marsh & Gardiner's solid extract every two and three hours for six and eight successive doses without the slightest unpleasant effect, though one dose of gr. ½ of the solid extract of unknown (to me) make, caused in another (a lady) patient severe stiffness of the jaw, anæmia of the brain (fainting), and nervous trembling, which symptoms disappeared in about an hour.

2. The specific effect of the Indian hemp in this, as in other cases, was first to depress the sensomotor system, then to stimulate the ideational, emotional, perceptive, and memorial psychic-centres, the optic, auditory, and pneumogastric nerves, while paralyzing the will.

3. I cannot forbear comparing this state of trance with that psychic condition found in the ordinary hysterical paroxysm. In both there is complete subjugation of the will to the exalted and other psychic functions.

4. Doubtless the serious disturbance of the circulatory system in my experience was largely due to the combination with ergot.

5. Taking the present for a test case, the value of Parke, Davis & Co.'s preparation of haschish as an exhilarant, at least, cannot be questioned.

Those interested in the subject of the physiological action of the drug will find much valuable information and detailed cases in the following works:

1. Pereira: "Elements of Materia Medica," edit. 1860, art. Cannabis Sativa, where an interesting case of haschish catalepsy may be found in detail.

2. Stillé: "Therapeutics and Materia Medica," edit. 1860, pp. 81-86; the author referring to one case, among others, that of Dr. John Bell (originally reported in the Boston Medical and Surgical Journal, 1857, p. 209), which in some particulars resembles mine.

3. Wood: "Treatise on Therapeutics," edit. 1876, art. Cannabis Indica, where he records his own experience, greatly differing from mine.—Frank Dudley Beane, A. M., M. D., in *Buffalo Medical and Surgical Journal*, May, 1884.

**Cascara Sagrada.*** — Cascara Sagrada is the name given to the Rhamnus Purshiana, a shrub belonging to the natural order of Rhamnaceæ.

It is found in the Rocky Mountains and westward to the Pacific Ocean, between the 39th and 49th degrees latitude. It sometimes attains the height of twenty feet.

The branches are round and covered by a smooth, pubescent bark; the woolly hairs being denser on the young, than on the older ones.

The leaves are alternate and petioled. They are oval, acute, serrate, excepting the base, which is entire and obtuse. The leaves are from two to seven inches long, and one to three inches wide, pinnately veined and covered with a dense down underneath, but becoming glabrous and bright green as they get older.

The flowers are small and are in umbellate cymes. They are white and appear after the leaves have matured.

The small calyx is five-cleft and the petals, five in number, two-cleft at the apex.

The fruit is a small black drupe, obtusely three-angled, and contains three shining black seeds.

The part of the plant used in medicine is the bark of the branches. In the dried state it is externally quite smooth, of a gray, and sometimes darker color, intershaded with belts of a lighter color often appearing in circular spots.

*From a thesis presented to the Philadelphia College of Pharmacy, by Eugene G. Eberle, Ph G.

The bast is either of a yellow or red-brown color, the fibres of which run quite parallel with each other.

Upon examination the bark is shown to consist of three parts: The outer, middle and inner bark.

The outer bark consists of several layers of shrunken cells, then several rows filled with red coloring matter. The middle bark is composed of parenchymatous cells with groups of yellow cells scattered about.

The inner bark consists chiefly of medullary rays separated by bast, parenchyma and fibers. The medullary rays of the bast are yellow. About the fibers are seen yellow crystals.

ANALYSIS.

*Moisture:* Upon drying two grams of the powdered drug, it lost nearly .20 grams or about ten per cent., equaling the moisture.

*The Ash:* 7 8 grams were taken in fine powder and incinerated. The ash remaining weighed 0.714 grams, equaling 9.154 per cent. of the bark. Water dissolved .292 grams of the ash. This solution upon being tested, was found to contain carbonate and sulphate of potassium, and chloride of calcium equal to 40.9 per cent. of the ash.

The residue, after treating with water, was moistened with hydrochloric acid, and evaporated until all free acid was expelled; more acid added, and then water. This solution contained the bases magnesium and calcium, and the acids phosphoric and carbonic.

The amount in solution was .324 grams, equaling 45.37 per cent. of the ash.

The residue was boiled with a 20 per cent. solution of sodic hydrate, which dissolved .0659 grams of combined silicia.

The residue left weighed about .033 grams, equaling 4.55 per cent. of clay, etc.

*Extraction with Benzol:* 31.103 grams (℥ j) of drug was taken and exhausted with benzol, which left upon evaporation 1.944 grams extractive, of a soft consistence and oily to the touch; 0.6479 gram of this extract was taken and treated with water, which dissolved about .162 gram, consisting of extractive matter and a small amount of brown resin, which turned red in the presence of an alkali. The ash of this extract amounted to .0648 grams.

Treated with dilute hydrochloric acid more resinous matter was dissolved, and extraction with alcohol yielded resinous and extractive matter and chlorophyll.

Insoluble in all the above was .0972 gram, of a fatty oil, yellowish in color, and a green wax. The wax was soluble in chloroform, and the oil formed a soap with potassa.

*Extraction with Alcohol:* The drug remaining after treatment with benzol was dried, and then percolated with eighty per cent. of alcohol. The percolate was evaporated and yielded about nine grams of extract. This consisted of 3.6 grams of combined resins, the remainder being composed of extractive, starch, tannin and oxalic acid.

The presence of tannin was ascertained by test solution of gelatin and ferric chloride. I estimated the tannin by Carpeni's method. An aqueous solution was made of the extract. One-sixth of the solution was precipitated by ammoniacal acetate of zinc; the precipitate so formed, dried and ignited. The ash remaining weighed .0486 gram, showing the amount of tannin to be .0324 gram, or in the whole amount of drug used (31.103 grams) 29 gram. One-ninth of the solution was precipitated by solution of sub-acetate of lead. The precipitate consisted of tannic and oxalic acids, etc.

The filtrate was clarified with carbonate of magnesia and diluted with water to 710 c. c., of this solution 178 c. c., reduced 15 c. c. of Fehling's solution, showing the presence of .81 gram of glucose in 9 grams of alcoholic extract, or 31.103 grams of drug.

In the aqueous solution I tested for alkaloids, but found none.

The portion of extract not soluble in water, consisted of the combined resins.

The drug treated with benzol and 80 per cent. alcohol was dried and extracted with cold water, which dissolved about 3.9 grams, consisting principally of gum and coloring matter.

The dried residue insoluble in the foregoing menstrua was treated with 3.785 c. c. of a one per cent. solution of sulphuric acid by boiling the drug in it for six hours. By this the starch was converted into glucose. The test showed the presence of 1.2 grams glucose or 1.08 grams of starch, i. e.: 2.36 c. c. of the solution reduced 15 c. c. of Fehling's solution.

The insoluble residue was then treated with a 20 per cent. solution of sodic hydrate. This solution contained pectase and decomposition matter. The cellulose remaining weighed 2 895 grams.

The total amount of resin in 7.8 grams of drug was .907 gram, or about 11 per cent.

The resins are three in number: One red, a second brown, and a third of yellow color. The total amount of resin was obtained by percolating 7 8 grams of drug with alcohol slightly acidulated with hydrochloric acid; the percolate was neutralized with ammonia and evaporated, dissolved in solution of potassa and precipitated with hydrochloric acid, and this precipitate dried at a gentle heat.

The yellow resin was obtained by first percolating the drug with diluted alcohol and when exhausted percolating with chloroform and then purifying the resin so dissolved with chloroform. It is colored reddish-brown with sulphuric acid. The diluted alcohol dissolved the red and brown resins. The brown resin was removed by animal charcoal, leaving the red resin in solution, which was then purified. The brown resin was obtained by boiling the drug in water, evaporating the solution, and dissolving the resin by means of alcohol. The brown resin is colored red by alkali and blood-red with sulphuric acid. It is slightly soluble in water, and very soluble in alcohol and dilute alcohol, but not in ether. It is found mostly in the inner and middle layers of the bark.

The red resin is found in the outer bark; it is colored rich brown with solution of potassa and brownish-red with sulphuric acid.

Tests for emodin and alkaloids at various stages showed negative results.

RECAPITULATION.

*The Ash.** Weight 0.714 gram.

| | |
|---|---|
| Soluble in $H_2O$. .292 gram=40.9% | Carbonate of Potassa, Sulphate of Potassa, Chloride of Calcium. |
| Soluble in dil. H Cl. .324 gram=45.37%. | *Bases:* Magnesium, Calcium *Acids.* Phosphoric, Carbonic. |
| Insoluble matter, 033 gram=4.55% | Clay, etc. |

*The Bark.*†

Moisture, 3.1103 Grams or about 10%

| | |
|---|---|
| Extracted by Benzol, 1.94 grams, | Extractive resins, chlorophyl, yellow fixed oil, green wax. |
| Extracted by Alcohol (80%) 9 grams | Resins, extractive, glucose, tannin, oxalic acid. |
| Extracted by water, 3.9 grams | Gummy matter and coloring. |
| Extracted by Acid, 1.2 grm. | Starch. |
| Extracted by Alkali, 6.3 grams | Cutose and decomposition matter. |
| Final Residue, 2.9 grams, | Cellulose. |
| By distillation, Traces, | Volatile Oil. |

*Pharmaceutical Preparations:* Eighty per cent. alcohol seems to be the best menstruum for pharmaceutical preparations of th s drug. A fluid extract made with this alcohol keeps well without precipitation taking place. The solid extract remains in a pilular

*For analysis of Ash, 7 8 grams of drug were taken.

†For analysis of the Bark, 31.103 grams of drug were taken.

condition. Quite an agreeable syrup can be made by taking of Fluid Extract ℥ ij, Tincture of Cardamon, ʒ jv; Ammoniacal Glycyrrhizin, ʒ jss; Carbonate of Potassa, grains 40, Simple Syrup to make one pint. An Elixir is prepared by taking of Fluid Extract, ℥ ij; Tincture of Cardamon, ʒ jv; Oil of Cinnamon, ♏. x; Oil of Allspice, m.viij; Oil of Lavender, ♏. ij; Ammoniacal Glycyrrhizin, ʒ jss; Carbonate of Potassa, grains 40; Syrup of Orange Peel. ℥ jv; Elixir to make one pint.

*Therapeutic Properties:* The drug owes its virtues to the red and brown resins; the yellow resin seems to have no medicinal properties. It appears to be quite an efficient remedy in chronic constipation, and therefore, worthy of eminence, as it is an indigenous drug, and havs the advantage of cheapness over other remedies used for this purpose.

The dose is about a half fluid drachm of the fluid extract.—*The Druggist.*

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**The Beneficial Effects of Convallaria.**—For the following abstract of the notes of the case, I am indebted to Mr. T. Wilson, M. B., my house-physician:

W. Carpenter, aged 32, a porter, was admitted into University College Hospital on December 28th, 1883. From the age of fourteen to within the last seven years the patient had been a potman, and had been accustomed to drinking "whatever he could get." For the last seven years he had been a porter, and a moderate drinker. Patient had an attack of rheumatic fever when six years of age. There was nothing worthy of note in the family history.

Three weeks before admission patient's feet began to swell; a week later he noticed that his abdomen was getting larger, and this has gradually increased. There was also a troublesome cough. On admission the present state was as follows:—Patient is a slenderly built man, of medium height, with a dark, rather sallow complexion. There is but little subcutaneous fat, and the muscles are small and flabby. There is œdema of both lower extremities, reaching as high as the calves. There is considerable ascites, the abdomen being distended and its walls tense. The percussion note is resonant from the ensiform cartilage to an inch and a half below the umbilicus, below which there is dullness. The liver cannot be felt. The splenic dullness is concealed by the fluid in the flanks. The pulse, seventy-eight per minute, is irregular, small, and rather compressible. The heart's impulse is diffused, and extends to an inch outside the nipple-line. The heart's action is irregular. A presystolic thrill can be felt and murmur heard at the apex, but not very distinctly. The second sound is accentuated at the base, especially over the pulmonary cartilage, and cannot be heard at the apex. The breathing is affected, and the patient cannot lie down. There is a troublesome cough, with copious aërated mucous expectoration. Rhonchal fremitus is felt over both sides of the chest; and the breath sounds are harsh and accompanied by sonoro-sibilant rhonchi all over both lungs, and by large bubbling *râles* at the bases. The urine is greatly diminished, only ten ounces being passed in the day; it is reddish-brown in color, and of acid reaction. There is a large precipitate of urates on standing; no sugar nor albumen. Patient's appetite is bad; he vomits every morning and has done so for four or five months. The bowels are regular. The tongue is large, indented by the teeth, and slightly furred.

A mixture containing ʒ i. of infusion of digitalis to the dose was ordered every four hours.

On January 5th, the œdema of the feet and ankles had almost disappeared, but the ascites had increased so much that the abdomen was tapped, 12 pints of clear straw-colored serum being withdrawn, a portion of which became solid on heating. After this the urine was slightly increased in quantity for a few days, but never exceeded 24 ounces. On January 8th the girth of the abdomen at the level of the umbilicus was 36 inches. The pulse was more regular —82 per minute. Morning vomiting still continued. The sonoro-sibilant rhonchi had to a large extent disappeared. On the 12th, pleural friction sounds were observed over the base of the left lung; there were no râles over the upper parts of either lung; the cough and expectoration were greatly diminished. Morning vomiting had now ceased. On the 21st the ascites had again increased very considerably, and there was some œdema about the ankles, the patient having been allowed to get up for some days. The urine had never since admission exceeded 24 ounces in the 24 hours; there had been no albumen. Pleural friction still continued over the left base; but the bronchitic *râles* had disappeared. On the 25th the abdomen was very tense and dull all over except over an area extending from the ensiform cartilage to two inches above the umbilicus.

The digitalis was now discontinued, and ten minims of liquid extract of convallaria majalis ordered every four hours.

The quantity of urine rapidly and steadily increased to 46, 51, 60, and 72 ounces in the 24 hours. The ascites also diminished; the cardiac action became more efficient; and the thrill and murmur more distinct. On the 30th there was resonance down as far as the umbilicus; the girth at the level of the umbilicus was 35½ inches.

A drachm of compound jalap powder was ordered every morning, and this procured two or three watery motions a day.

On February 7th the girth at the umbilicus was 31½ inches; on February 11th, 29½ inches. On the 13th there were no signs of fluid in the abdomen, and no œdema of the legs. The presystolic murmur and thrill were well marked. Friction sounds were still heard over the left base; but no other abnormal pulmonary signs existed. Appetite fairly good; no vomiting; bowels regular; tongue clean. Liver dullness diminished; the organ cannot be felt. Spleen cannot be felt; dullness somewhat increased.

The convallaria mixture was ordered to be discontinued, and the jalap powder was left off on February 10th.

The patient leaves for Eastbourne in a few days; and is now free from any evident symptoms.

*Remarks.*—My experience of the use of convallaria in cases of cardiac disease has not hitherto been so satisfactory as the reports of the value of the drug had led me to expect (Practitioner, xxix. 226, 384); but in the case just described the good effects resulting from its administration were marked and unmistakable. Practically, it might be summed up as a case of mitral obstructive disease, with irregular and inefficient cardiac action; deficient secretion of urine; moderate dropsy of the legs, and considerable ascites. Whether or not the last mentioned symptom depended partly on morbid changes in the liver is doubtful. The obvious results of the administration of the convallaria were: (1) a distinct improvement in the action of the heart which became more regular and efficient, while the thrill and murmur became more evident; (2) a considerable and progressive increase in the quantity of urine produced; and (3) rapid diminution and ultimate disappearance of the œdema of the legs and the ascites. The compound jalap powder helped, no doubt, to get rid of the last symptom; but the other effects noted were unquestionably due to the convallaria, and the increase in the quantity of urine must have been an important factor in removing the dropsical accumulation. I have thought it worth while to report this case in support of the value of convallaria in the treatment of cardiac affections, although I do not for a moment believe that it will entirely supersede other drugs. The patient is now practically well, so far as symptoms are concerned, but the signs of the mitral obstructive disease are very distinct.—Frederick T. Roberts, M. D., F. R. C. P., in the *Practitioner*, April, 1884.

**Detection of Albumen in Urine.**—Dr. Fowler read a paper, at the New York Academy of Medicine, Stated Meeting, March 6, 1884, on the detection of albumen in urine, with a review of the methods recently advanced. Albumen in the blood is *native* and *derived*. There is native albumen in the blood; nine per cent. in the serum, this being termed serum-albumen, the contraction of the fibrin expelling the serum. $\frac{8}{100}$ of this is another kind of albumen, called para-albumen. When the albumen is diluted, the effect of coagulation by heat is less marked; if organic matter, as acetic acid, be added, heat has no effect, but it is converted into another substance, "acid albumen," not coagulable by heat; therefore, it is foolish to add acid before boiling. When an alkali is added, the albumen solution is rendered markedly alkaline; this is termed "alkaline albumen," which is not thrown down by heat; these are known as derived albumens; if there is $\frac{2}{100}$ albumen, heat will give a slight opacity; then see if the albumen solution is not strongly alkaline or acid; if necessary, boil first, before adding the acid. The nitric acid test is the most delicate; the acid has to be placed in the tube first, then pour in the urine on the surface; you will then observe a ring of coagulum extending down to the acid. One per cent. can be detected in this way. The ferro-cyanide of potassium test was then mentioned.

*Picric acid.*—Dr. Johnson, of London, brought this test froward March 19, 1883, before the Clinical Society; but it precipitates peptones which are often in the urine; the precipitate is entirely dissolved by the heat, and re-precipitated by cold, or by the addition of acid. Some people doubt the presence of peptones in the urine; urates are thrown down by picric acid; quinine is also thrown down. Any precipitate that is cleared up by heat is not albumen; add an equal bulk of picric acid to that of urine, it detecting $\frac{1}{100}$ of albumen; picric acid is a phenol, made by the action of nitric acid on indigo; it is perfectly soluble in water, and is a very marked and delicate test for albumen.

The *acidulated brine* test of Dr. Roberts, of Manchester, will detect one-tenth per cent. of albumen (0.1), but it is not so delicate as others; an objection is that the water evaporates, leaving the salt; chloride of sodium contains considerable dirt.

*Ferro-cyanide of potassium* will detect one per cent. of albumen in urine.

Dr. Oliver, of London, has suggested another test, the *tungstate of soda*, in an acidulated solution; this test gives a distinct alkaline reaction, and gives a very marked coagulum, detecting one-tenth per cent. These tests mentioned above very rarely go beyond this fraction.

*Potassio-mercuric iodide* (Oliver's test, but derived from the French), added to an albuminous solution perfectly clear and transparent, detects one-hundredth per cent. (0.01) of albumen.

But these tests all fail if more delicacy is required.

*Dr. Oliver's test-papers* always detect the smallest amount of albumen. I have experimented in a large number of cases on normal urine, and have always found albumen with this test.

The speaker touched upon *paraglobulin*, one of the fibrin ferments; *globulin; metaglobulin*.

*Peptones* sometimes appears in the urine.

*Picric acid tests.*—Heat should be always applied.

*Peptones.*—Take Fehling's solution; at the pale of contact a reddish discoloration will appear, showing the presence of peptones. Dr. Johnson denies the presence of peptones, but they do exist.

*Quinine* gives a very marked test [a quinine mixture was treated with a test, throwing down a precipitate; this was very prettily done]; if heat is applied, the precipitate gradually clears up.

THE PRESIDENT remarked that the subject of urinary tests was very important clinically, and that physicians in active practice were obliged to send their samples to persons experienced in that work.

DR. HUDSON said that while "interne" in Bellevue he discovered that one-third, or perhaps one-half, of the specimens of urine contained albumen. In testing, I bring the urine to a neutral condition first. Do not give up searching for casts because no albumen is seen. One fallacy of applying heat is its precipitating phosphates; therefore, I place the tube in ice water (always keeping ice water upon my desk at the hospital), the phosphates re-dissolving in a cold fluid. These recently introduced tests are objectionable, as they precipitate quinine and peptones. I prefer heat and nitric acid, and if renal disease be suspected, I place the specimens under the microscope.

DR. JASPAR GRISWOLD—I mentally divide these into two classes: (1) Those by which we can observe the smallest amount of albumen, and (2) clinical tests. By using the tests of the first-class, we can introduce a greater possible number of errors; but it is desirable to note all these errors. It is not fair to take up text-books written on the basis of ordinary testing. Albuminuria is not the serious disease it was formerly believed, therefore the older tests are the best, using care in their employment; as, in using the recently proposed tests, which indicate minute quantities of albumen, a serious condition might be diagnosed. In Bright's disease, albuminuria may be temporarily absent. In examining specimens of urine it is of importance to have a black background, for instance a black cloth coat-sleeve. Coming back to the heat test, as the best, we should have the urine very clear, filtered; divide into two portions, boiling the one, and holding both test-tubes against the coat sleeve. When the specimen is not clear, that may indicate the presence of bacteria, phosphates, mucus; in these cases, add one-quarter the bulk of caustic potash, to render the urine clear; then employ Heller's test, *i. e.*, the cold nitric acid test, adding two or three drops if there is opacity from phosphates. This test is open to fewer objections, in the case of presence of urates, and is more reliable.

In Bright's disease the quantity of albumen varies in the urine taken in the morning and at night, there being [often] none in mid-day. *Picric acid* will throw down peptones, which may engender mistakes; its interest is a scientific one, but its clinical importance is doubtful.

*Sugar.*—Regarding this, Pavy states it is normally present in urine.

DR. C. A. DOREMUS—Perhaps the simplest test is meta-phosphoric acid. Most urines are so turbid that we must filter before seeing albumen.

DR. MUNN—To examine urine successfully, I introduce a strong light into a dark room (on the same principle as a pencil of light coming through a hole in a shutter), holding the test-tube against black pasteboard. By getting a properly reflected light, we can even see well by placing the tube against a coat-sleeve.

DR. MAXWELL—I have used Heller's test reversed; lately I have used a solution of tungstate of soda, containing a small amount of picric acid; but I seldom rely on one test alone, usually employing three or four different tests. Lately, in using picric acid, cloudiness would entirely disappear, then re-appear; I would then use other tests, which would show a small amount of albumen; yet I have failed to find peptones in the urine. Clinical evidence of a small amount of albumen is not of serious significance, but I except epithelium.

DR. FOWLER, in closing the discussion, objected to bringing out such a discussion as this; we never should rely on one test. It may be a question how small a proportion of albumen may have a clinical significance, e. g. at the beginning of the disease; it appearing, disappearing, and then reappearing. This line of study will also enable investigators to determine whether a certain amount of albumen in the urine be normal or not. Peptonuria is a real condition, I having seen it. This is the best seen with Fehling's solution, which will then give a red color; it is also advisable to have by one a solution of ferro-

cyanide of potassium; also citric and acetic acids.—(*The Planet*, April 16, 1884.)

**Note on the use of Hydrobromic Acid in Epilepsy.**—The researches of Dr. Reichert in the physiological laboratory, long since showed that hydrobromic acid is so nearly equivalent to the bromide of potassium, that it ought to be able to replace the salt to a considerable extent in practical medicine, as being more agreeable to the taste, and not having any potash in it to increase unnecessarily the depression of the circulation and disturb the general nutrition.

Nevertheless, the verdict of these neurologists who have used hydrobromic acid has been strongly against it, and my own earlier experience co-incided with this. Thinking over the matter it occurred to me that this negative result had been caused by the failure to use the remedy in sufficient amount. One or two teaspoonfuls of a three-per-cent. solution (Fothergill's formula) seems to have been a common dose.

The acidum hydrobromicum dilutum of the United States Pharmacopœia is a ten-per-cent. solution, yet one drachm of it is only equivalent in bromine strength to nine grains of the potash salt. A teaspoonful of Fothergill's solution represents scarcely three grains of the bromide. It is plain, therefore, that much larger doses of the acid should be employed.

In my ward at the Philadelphia hospital there are twelve cases of old, severe, essential epilepsy, which from August 13, 1883, to September 15th, were taking each seventy-five grains daily of the bromide of sodium, and in most of which the acne and other evidences of bromism were very pronounced. During the thirty-three days these twelve patients had two hundred and twenty-seven fits. Of these fits one hundred and thirty-two occurred during three days in one patient, and probably should be deducted, for the purposes of comparison, leaving ninety-five as the number. The patients were then left fifteen days without medicine, were then given a half fluidounce of the officinal hydrobromic acid three times a day for twenty-three days; after this the dose was increased to six fluidrachms for six days; then to one ounce for forty-three days. After this, for sixty-two days, they were given each ninety grains of the bromide of potassium daily. Thu results are expressed in the following table.

The smaller number of fits in the first entry of the second column is obtained by deducting from the whole number the many fits occurring during three days of epileptic status in one person.

| Medicine, Daily Dose. | Number of Days. | Number of Fits. | Averages number of fits occurring in the 12 patients conjointly, per day. |
|---|---|---|---|
| Bromide of sodium, 75 grains, | 33 | 227 (or 95) | 6.9 (or 2.9) |
| No medicine. | 15 | 241 | 16.1 |
| Acidum hydrobromicum, dilutum, f℥ iss. | 23 | 81 | 3.5 |
| Ibid. f℥ ijf℥ ij. | 6 | 12 | 2.0 |
| Ibid. f℥ iij. | 43 | 79 | 1.8 |
| Bromide of potassium, 90 grains. | 62 | 132 | 2.2 |

It will be seen that the effect of the acid in reducing the number of fits was directly proportionate to the dose, and was very pronounced. When three fluidounces were given daily, the number of fits was reduced to about one tenth of those which occurred when no remedy was administered: whether the great number of fits which happened during three days of epileptic status is deducted or not from the roll of the sodium bromide, the effect of the acid was much greater than that of the seventy-five grains of the salt.

Even the largest dose of the acid was better borne than were the seventy-five grains of the bromide of sodium. The eruption of acne was much less universal, and when present much less severe, whilst the peculiar apathetic countenance of bromism was entirely wanting, although it had been very distinct in several of the cases whilst the salt was being administered. The effect of a daily dose of ninety grains of the bromide of potassium upon the recurrence of the convulsions was not as great as that of the full doses of the acid, but the bromism produced was distinctly more severe.

The acid was given after meals, with an equal amount of ginger syrup. Each dose was diluted with a full half pint of water, and no evidences of gastric irritation or other disagreeable symptoms were produced. It must, however, be borne in mind that the cases were old epileptics from the lower ranks of life, and in robust, general health, with insensitive, powerful digestive organs, so that I think in private practice these large doses should for the present but used with caution. I have, however, given half-ounce doses to a delicate girl without perceptible evil effects of any kind.—Prof. H. C. Wood, M. D., in the Phila. *Medical News*.

**Dyspnœa and its Treatment by Quebracho Aspidosperma.**—A Spanish physician (Mariasi y. Larrion) of the Princess Hospital staff, Madrid, has written a work on the above subject, in which he gives us the result of his own experience with white quebracho in the treatment of dyspnœa. He divides the causes of dyspnœa into three groups. The first group consists of all acute and chronic affections of the lungs or pleura which diminish the area of hematose, and valvular lesions which produce the same result by the pulmonary congestions which they determine. The second includes abdominal lesions, hypertrophy of the abdominal organs, etc., which interfere with the motions of the diaphragm. In the third group, he places essential asthma and hysterical dyspnœa. After having tried all remedies recommended in dyspnœa, the author proclaims the superiority of quebracho.

This remedy was proved by the author and seven of his confréres with the following result: Absorption rapid; elimination slow.

Nervous System.—Nothing observed from ordinary doses. Large doses produced heaviness of the head, cephalalgia, dim-sightedness and tendency to vertigo.

Circulatory and Respiratory Apparatus.—Diminution of the number of pulsations and of respiratory movements. Augmentation in the force of cardiac contractions.

Digestive Organs.—Bitter taste, similar to that of quinine; sensation of heat in the stomach; sometimes diarrhœa.

Urinary Organs.—Sensation of burning in the urethra during the emission of urine; urine appears red.

From a therapeutic standpoint the author regards white quebracho as the prototype antidyspnœics; the best results were obtained in dyspnœa due to cardiac lesions or pulmonary affections. Quebracho may be administered in the form of syrup, tincture or extract, and in doses of from fifty centigrams to four grams for the last two preparations. The following are the magisterial formulæ:

℞ Quebrachonis aspid. tinct. vel ext., 2 ad. 4 grams
Aquæ, 150 grams
Syrupi simplicis, 30 grams.

M. Sig: Take in four doses with two hours between each.

Again:

℞ Quebrachonis aspid., 180 grams

Sig: Dessertspoonful every two hours.

As a basis for the following conclusions the author reports forty-two observations in which white quebracho had been employed in dyspnœas of diverse origin.

Conclusions:

1. "White quebracho is a remedy the principal effects of which consist in a diminution of the number of respiratory movements and of cardiac contractions.

2. "Its action appears to exert itself principally on the heart, in toning and regulating its contractions either in a direct manner, or through the intermediary of the nervous system.

3. "This action is evident as the facts reported prove, and it is promptly felt immediately after the administration of the medicine.

4. "We may consider quebracho as the only medicine of manifest antidyspnœic action, and it combats this symptom without the aasistance of other remedies.

5. "It will be necessary to experiment with it in a larger number of cases before judging of its effects in nervous dyspnœa.

6. "It is possible that it produces the same effects in dyspnœas provoked by acute diseases of the thoracic organs.

7. "We have not had sufficient personal experience of its action in dyspnœas produced by abdominal affections, but, we think, seeing this mechanism, that its effects will not be less certain.

8. "Its administration in the above indicated doses is not dangerous, and its continued use does not produce any alteration in other organs.

Quebracho had been previously studied by Penzolt, and by Simon y. Nieto, and to complete this we will add the conclusions of the last named writer.

1. "Quebracho is a substance which possesses the property of moderating respiratory movements; it is the digitalis of the lungs.

2. "It relieves dyspnœa whether this be due to nervous troubles or anatomical alterations in the circulatory or respiratory apparatus.

3. "Its action is immediate and its effects certain. At least it has been so in the immense majority of cases in which it has been employed.

4. "Its efficacy in dyspnœa produced by circulatory difficulties leads one to believe that it exercises a direct action not only on that part of the (cardiac) nervous system which is connected with respiratory movements, but also on the apparatus of cardiac innervation.—*Physicians' and Surgeons' Investigator.*

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**Stigmata Maidis.**—It is only a few years since this agent has been employed, and we are indebted to France for its introduction. In this country it is as yet comparatively unknown, and but few practitioners have made use of it, or are acquainted with it in its mode of action.

The green pistils, or "silk" of our common Indian maize, or corn, are employed, and a fluid extract prepared by a process of maceration and hydraulic pressure without heat. To this liquid is added a sufficient quantity of alcohol to prevent fermentation or decomposition. This is somewhat of a disadvantage and drawback in its therapeutical application, but can hardly be avoided.

The strength of this extract is the standard of the United States Pharmacopœia of 1880, viz.: one gram to each cubic centimeter, or one ounce to each fluid ounce. The dose of the fluid extract thus prepared is from one to two fluid drachms.

The fluid extract has a brown color and a pleasant odor and taste, reminding one a great deal of green corn. I wish to state here that the extract made by Parke, Davis & Co., of Detroit, is the most agreeable to the taste of all the makes I have met with, and is fully equal to any in its action.

The corn silk has been in use for a number of years by isolated practitioners, but the profession at large was not acquainted with its use until about the year 1879, and, although it has been extensively administered since then, but little definite is yet known of its therapeutic properties. It is undoubtedly a diuretic, and one of considerable power. Besides this, it seems to possess some anodyne power over the mucous membrane of the urinary tract. M. Deunée, of Bordeaux, regards it as beneficial in all diseases of mucous surfaces. The drug renders the pulse more regular, increases the arterial tension and diminishes that of the veins. The tolerance of the drug is complete, and it can be taken for a very long time without any inconvenience. M. Castan, Professor at Montpellier, believes it to be a local anodyne or anæsthetic, whereas, M. Deunée, of Bordeaux, regards it as having an elective action on the mucous membrane of the bladder.

In regard to its application, the writer has had but a limited experience, but, although not extensive, it has been satisfactory to a high degree. In a number of cases of renal congestion, due to various causes, such as overwork, the use of alcoholics, "cold," etc., the fluid extract of stigmata maidis has acted promptly and efficiently. In affections of the bladder, the action has been good; but the most satisfaction has been derived from its action in cases of true and spurious gonorrhœa. In the former it aids the action of the drugs administered, and increases the rapidity of cure. Some late writer has even claimed that he has entirely relieved such cases by the use of the corn-silk alone. I have used it alone in several cases of spurious gonorrhœa, and was agreeably surprised to see them get well in a short time by means of this treatment.

It has lately been claimed by a French writer that corn-silk has a very good action in heart diseases, claiming superiority for it over digitalis and lily of the valley (convallaria majalis). That it has some good effect in such cases, is probable, but its further use in cardiac affections will have to be presented before its claims in this direction will become fully established.

Often the corn-silk will produce a cure in cystic or renal affections after the usual internal remedies have failed, or it will have the effect of rendering them more efficacious when conjoined with them.

Dr. Dufau regards as contra-indications to the use of this drug the following conditions: Acute traumatic cystitis or gonorrhœal cystitis. The drawback to its use is that it increases the pain in such cases.

I will briefly state here that corn-silk has been satisfactorily employed in cases of renal colic, where it relieves the pain, gravel, cystitis, acute and chronic, pyelitis, vesical irritation and tenesmus, suppression of urine, retention of urine, dropsy, etc.

The practitioner who will use this remedy in the proper case, will find that it will give a great deal of satisfaction, and the only raison d'être of this short note is to call attention to a good and reliable remedy, which seems to be but little known and less used.—A. H. Ohmann-Dumesnil, M. D., in the *Weekly Medical Review*, April 26, 1884.

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**Extractum Pancreatis in Typhoid Fever.**—In typhoid fever, more than in any other disease, do the indications point clearly and emphatically to the most careful dietetic management of the case from the beginning to the end of it. The debilitating effect of the continued fever, protracted through a period of four or six weeks and sometimes even longer, must be combated in every possible way, and yet without adding to the danger of loading the intestines with undigested food, of itself a source of evil and discomfort. Only that which is absorbed and assimilated is of real service to the system. In the enfeebled condition of the digestive organs very little of the food taken into the stomach can or will be digested, but passes down through the intestinal tract in a constantly fermenting state, thus adding to the discomfort by the increasing flatus, and over the inflamed and ulcerated Peyer's patches, producing, possibly, hemorrhage, or even death, by perforation. The great danger from this source has led some emi-

nent physicians to advocate even total abstinence from food, confining the patient strictly to water, even for three or four weeks. If, however, food can be so thoroughly digested, before being taken into the stomach, that all will be readily absorbed and assimilated, leaving no residue, the indications will be fulfilled. Milk is the article of diet usually relied upon for feeding typhoid-fever patients, but even when the digestive organs are in a healthy condition it coagulates into a mass of curd as soon as it reaches the stomach. This hard mass has to be digested and disintegrated before being absorbed. If this fails to be accomplished, by reason of the small quantity or poor quality of the digestive fluids, the irritating mass passes down through the intestines, a constant source of annoyance and danger. This may all be obviated by digesting the milk with the pancreatic extract. Milk so treated cannot be coagulated by even the strongest acids, its casein being transformed into peptone and in a condition to be at once absorbed and assimilated. There is noticeable a slight bitterness, to which the patient soon becomes accustomed, so that it is taken readily and produces no discomfort. Even this bitter taste may be avoided by stopping the process of digestion before it is entirely completed. It has been found by experiment that the objectionable taste is only developed when the casein is entirely peptonized. It is scarcely ever necessary to carry the artificial digestion quite so far, and when stopped at any point before completion the taste is perfectly natural. If immediately placed on ice, it can be kept as long as simple undigested milk. The ferment of the pancreatic extract is held in a latent condition, and when taken into the intestinal canal may still further aid in the completion of the digestive process.

To avoid the possibility of the patient becoming tired of the same article of diet day after day, its form of administration may be varied in a number of ways. As the casein is peptonized, and can not be coagulated by even the stronger acids, the milk so prepared can be utilized in making milk punch. This can be flavored with lemon-juice or any other acid desired. Thickened with gelatine, sweetened and flavored, it forms a delicious milk jelly suitable for convalescent patients and grateful to the taste.

During the past two years I have met with many cases in which the use of the pancreatic extract has yielded the most gratifying results. Not alone in typhoid fever is it useful, but in all instances where the digestion is enfeebled, or where it is interfered with by the presence of ulcerated or inflamed surfaces, the process of peptonizing the food will be found of service. In rectal alimentation its importance is manifest, the food so prepared being readily absorbed and appropriated without inconvenience or irritation. I have sustained patients with gastric ulcer entirely by nutrient enemata twelve or fourteen days. In this time the ulcer will be entirely healed so as to allow the cautious administration of peptonized milk in gradually increasing quantity, until a full meal can be taken.—Prof. Frank C. Wilson, M. D., in the *American Practitioner.*

**Kairine.**—Kairine was discovered by Dr. O. Fischer, of München University. Its antipyretic action was first investigated and the dose for the adult established by Dr. Filehne, who published the results of his experiments in the Berl. Klin. Woch. Number XVI, 1883. A very able paper, and probably the best one contributed, is by Lucino and Brüning. Dr. Knipping reports very good results where quiniæ sulphas proved to be of no benefit. In the case upon which he made this trial test, the temperature was 41.5° centigrade. In an article by Dr. Jansen, of Holland, there is published the report of twenty-six cases in which the remedy was used. These cases included pneumonia (asthenic form), pleuritis, typhoid fever and phthisis. Kairine was not tried in any case until the disease had existed several days, that is, not until there was an established high temperature. Drs. Ewald and Guttman have made reports of cases; the latter gave it in the treatment of forty-two patients, and reports very favorably.

In some of the cases where it was used by Dr. Jansen, the temperature was 40.5° centigrade, (104.9° F.), and in typhoid cases as high as 41.9° centigrade, (107.4° F.). The temperature was always taken in the axilla. Dr. Jansen found that when kairine was given in 0.25 gram (4 grain) doses, no benefit was derived; but received good results when the dose was increased to .5 gram repeated every hour until 1.5 grams (23 grains) were given. In one case of this method of administering the remedy, the temperature was reduced from 40° centigrade (104°F.) to 37° centigrade (98.6°F.).

Kairine does not reduce the normal temperature, and in pneumonia when given in .5-gram doses no reduction was observed; in phthisis, however, the result was easily accomplished. In one phthisical patient, a middle-aged lady, who had been affected with the disease for one year, and who was being rapidly reduced through the hectic fever, by the administration of two or three doses, the heat was reduced from an evening temperature of 39°–39.5° centigrade to 37.5° centigrade. In typhoid cases, to receive any marked effects, kairine had to be given in .75-gram doses, which were repeated hourly until four or five doses of the drug were given. In pneumonia the temperature was reduced only 1.5° centigrade, after the hourly administration of .1-gram doses.

Its action is transient and must be given in repeated doses to have manifest results. According to the observations of Guttman, upon suspending the administration of the remedy the temperature rose again, and became even higher than before its use. But the results of different observers are contradictory; Dr. Jansen claims that in his cases the former high temperature did not return on the discontinuance of the drug. Drs. Filehne and Guttman state that the effect of kairine is produced and can be maintained for some time when small repeated doses are given (one-third to one-fourth gram). Dr. Jansen could not get the effects of the drug from doses so small, except in phthisis. In cases of pneumonia more or less sweating accompanied the reduction of the fever; this sweating was not marked in phthisical patients. The pulse is lowered to the normal or nearly so. The urine is not affected by small doses, but by giving three to four grams the urine becomes greenish in color.

Dr. Jansen comes to the following conclusions:

1. That kairine acts with powerful energy in the reduction of temperature.
2. That this action is not reached in all cases.
3. That its action is brief.
4. That kairine can be used without any disagreeable symptoms, ringing noises in the ear, headache, vomiting or dangerous effects.—*Physician and Surgeon*, January, 1884.

**Kairine in Typhoid Fever.**—The following results of the action of kairine in the treatment of typhoid fever will be of interest to those who have perused the review in the Journal, of January 12th, 1884.

A male patient, twenty-two years of age, on the twenty-sixth day of his illness, had the following temperatures after a dose of ten grains of kairine, given at twelve o'clock noon; at 12.15, temperature 103°; at 12.30, 103°; at 12.45, 102.6°; at 1, 102.2°; at 1.15, 101.1°; at 1.30, 100°; at 1.45, 98.6°; at 2, 98°. Two hours later, the effect of the kairine had passed away, and the temperature had risen to 102.2°; but no further dose of the drug was given till twelve midnight, when the following result was observed: at 12, temperature, 103.5°; at 12.15, 102.4°; at 12.30, 101.6°, at 12.45, 99.4°; at 2, 99.1°; at 4, 98°. Again the effect of the drug had come to an end, and the temperature ran up quickly, reaching 101.2° at six o'clock, but not reaching the 103° line till after ten.

At twelve noon, a third dose of ten grains was given, with the following result: at 12, temperature 103.4°; at 12.30, 102.6°; at 12.45, 102.8°; at 1, 102.2°; at 1.15, 101°; at 1.30, 998°; at 1.45, 99.2°; at 2, 98°; at 2.15, 97.6°. In the course of the following four hours, the temperature again rose to 103°, when a large antipyretic dose of forty grains of quinine was given and the result observed was as follows: at 8 p. m., temperature 103°; at 10, 102.4°; at 12 night, 101.1°; at 2 a. m., 98.8°; at 6, 99.6°; at 10, 104.4°; at 12 noon, 96°; at 2 p. m., 96°; at 4 p. m., 97°; at 6, 99; at 8, 101°; at 12 night, 101.8°. This was the highest point reached, and the patient was thereafter considered convalescent. The kairine had been given to this patient in doses of ten grains, on twelve occasions during the thirty days of his pyrexia; and in addition, quinine had been given four times. No baths had been administered, as it was intended that the kairine should be tested fairly, in alternation with the quinine, and instead of the bath, which would otherwise have been given whenever the thermometer indicated a body temperature of 103° in the axilla. The heart's action had been weak from an early date in the illness, and digitalis was taken in doses of ten minims every few hours, in combination with nitro-muriatic acid and nux vomica No stimulants were given, with the exception of two ounces of brandy on one occasion only.

This case gives full confirmation to the statements made by Dr. Filehne, that we have in kairine a powerful antipyretic, which will, in the course of from two to four hours, reduce the temperature to the normal line, and with perfect safety to the patient. The quickness of its action gives it a great superiority over quinine, when a rapid effect is desired. On the other hand, its effect is far more evanescent, and the rapidity of rise of temperature, after the effect of the dose has ceased, is remarkable. No disagreeable results were observed to follow the use of the drug; the heart's action, which had been weak before, was no weaker; the urine did not present any abnormal modifications of color, and at no time did it contain albumen.

The experience of this case would tend to the conclusion that we have in this new antipyretic, kairine, a most valuable drug, which will perform quite safely, quickly, and pleasantly, the office which has hitherto been effected by nothing else than the disagreeable and troublesome necessity, the cold bath.—R. Shingleton Smith, M. D., in the *British Medical Journal*, Feb. 16, 1884.

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**Jamaica Dogwood.**—Dr. H. K. Wells, Erie, Ill. reports most favorably upon the use of the fluid extract of piscidia erythrina in ʒj doses in syrup, at bed time, in the treatment of a case of hysterical mania, where all other treatment had failed. The dose was ordered to be repeated every four hours until quietude or sleep ensued. The treatment was commenced on the 2d of October (Therapeutic Gazette), two doses being given that night. On the 5th of October a vast improvement in the patient's condition was noticed, and by the 7th Dr. Wells' services were dispensed with.

Dr. Elmore Palmer, of Boulder, Colorado, in the same journal notes the results obtained in the case of his own wife, who suffered from most obstinate attacks of nervous headache, a legacy inherited from her father. Treatment of every description had failed to give relief. The effect of the fluid extract of Jamaica dogwood was immediate, given in a teaspoonful dose. Whenever she is now troubled with a tendency to the recurrence of one of these attacks, a dose of the extract at once disposes of it, and peace and happiness reigns in the Doctor's household.

With regard to the introduction of "new remedies," disappointment is too frequently experienced, when these, which are highly vaunted by others, are put to the test of clinical experience in one's own practice. Yielding to this sense of disappointment, we are always liable to look with incredulous eyes upon the claims of new drugs, and consequently deprive ourselves of many an useful addition to our therapeutical resources. This is a danger to be guarded against. Failure may possibly be due to a faulty selection of suitable cases on our own part, to idiosyncrasy on the part of the patient, or to some error in the proper method of administration, or in the proper dosage. We ought, therefore, to give the drug a fair and impartial trial, and to judge of the results with unbiased minds. We certainly have not, as yet, exhausted the secrets of nature, and, as of late years many new and most useful drugs have been brought into use for the benefit of suffering humanity, so we know not what great and important discoveries may be made in the future. We may often be deceived, but not always; and one good remedy may readily stand sponsor for the time we have given to demonstrating the shortcomings of many useless ones. Every one useful addition to our armamentarium out of a hundred useless ones may be reckoned as good work done for the cause of medicine. What might, as far as previous knowledge and means of treatment are concerned, have proved an intractable or even hopeless case, may, by the good effects of the new and useful remedy, be brought to a favorable issue.—*Medical Press and Circular.*

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**Caffeine Considered Physiologically and as a Therapeutic Agent.**—Dr. Leblond concludes in La Tribune Medicale for November 18, a series of articles on this subject. His general conclusions are:

Of the physiological dose;

1st. Caffeine is an excitant of the nervous and muscular system.

2d. It diminishes the frequency of the pulse, increasing the force of the heart-beat and blood pressure by the vaso-motor constrictors.

3d. It lowers the peripheral temperature.

4th It has no influence on the formation or excretion of urea.

Of the poisonous dose:

1st. Caffeine exaggerates the excito-motor force of the spinal cord, paralyzes the peripheral sensitive nerves, and diminishes the sensibility of the pneumogastric.

2nd. It causes a rapid lowering of the blood pressure through paralysis of the vaso-motors.

3rd. The heart, in cold-blooded animals, beats slower and slower, to be finally stopped in systole; in warm-blooded animals, it becomes quicker at the close and stops in diastole.

4th. It produces tetanic contraction of the muscles.

5th. It rapidly lowers the temperature.

6th. It increases mal-assimilation.

As a therapeutic agent:

1st. It is, as a rule, tolerated much better by the system than is digitalis, and by beginning with small doses, there is no fear of the bad effects often produced by the latter.

2nd. It steadies the heart, increasing its force and slowing its beats.

3rd. It produces more or less of a diuresis.

4th. Not only is it a substitute for digitalis, but it should *always* be administered in serious cases which may result in immediate death, because its action is surer and more prompt than that of digitalis.

5th. It is best to administer the caffeine in small broken doses, in potions or subcutaneous injections, and to never begin with a stronger dose than 20 centigrammes, (gr. iij) to determine the susceptibility of the patient, then to increase the dose rapidly, if necessary, to from 50 to 75 centigrammes (gr viij–xij.) It is useless to give more than 1 gramme (gr xv.)

6th. In affections of the heart it should always be administered when from any cause, the patient's condition requires that the use of digitalis should be stopped or when it is not well tolerated.

7th. Caffeine seems to lower the temperature in

pyrexia, being useful also in these cases as a heart tonic.

8th. It is frequently very beneficial in albuminuria of cardiac or other origin.

9th. And finally, in cases of strangulated hernia it seems to act upon the muscular contraction of the intestine.—*Journal of the Am. Med. Association.*

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**Guachamaca A Substitute for Curare.**—Dr. Gomez de la Mata, in El. Siglo Medico, is quoted by E. Gayraud in the Gaz. Hebd. des Sc. Med. as describing this drug as belonging to the family of apocynies. The active principle is found particularly in the outer bark and in the different layers of the inner bark. It is used in the form of a resinous extract, which is of a sombre gray color, having the outward appearance of curare, but little soluble in water; completely insoluble in alcohol, chloroform and ether. Its reaction is that of the alkaloids in general. The marked resemblance between this substance and curare, in their physical and chemical relations, is reproduced in the physiological effects which are obtained in frogs, by injecting under the skin 10 milligr. (gr. 1-6) of the watery extract. The strength of the extract varies according to the time of year; during the rainy season the juice is most abundant and at its maximum of intensity. Its effects have been studied by Schiffer and Sachs.

The differences between the action of this substance and of the curare are the following:

1. The poison paralyzes all the skeletal muscles, whilst the respiratory muscles act perfectly.

2. It acts perfectly upon the nervous centers, which are effected more tardily by the curare.

3. Curare, which acts in very small doses when hypodermically administered, is without action when introduced into the stomach.

Sachs observed that the ingestion of the extract of guachamaca in very small doses killed chickens and dogs. Schiffer was obliged to employ doses twenty-five times the strength of those used subcutaneously in killing rabbits.

In man it has been used hypodermically in doses of 10 milligr. of the dried extract. In one of three cases the insertion of the needle was followed by a slight phlegmonous swelling, which disappeared the next day. The specific action of the drug does not appear until forty minutes after the injection, when a sleep follows, which is light in its onset, but soon becomes more profound, and continues for two or three hours. In a robust patient, 20 years of age, who suffered from spasmodic contractions of the muscles, the sleep was natural, and on his awakening there was no heaviness or dizziness of the head. The circulation and respiration remained normal. Reflex irritability was maintained throughout sleep, but the dose was too small to produce any beneficial effect.

This drug is applicable to cases of muscular contraction, and in all diseases which curare has been recommended. The dose is 10 to 15 milligr. (gr. 1-6 to 1-4) in hypodermic injections.—*Journal of the American Medical Association.*

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**Determination of Albumen in Urine.**—Dr. Oliver demonstrated a ready method for the quantitative determination of albumen in urine. The proceeding consisted in comparing the opacity produced by a test-paper in a definite measure of the albuminous urine, with a standard of opacity which represented a known per cent. of albumen; and in adding water, when it exceeded the standard, until the two were seen to be exactly equal. The standard opacity (representing 0.1 per cent. of pure serum-albumen) was preserved in a permanent form by precipitating chemically pure alum by means of ammonia, the opaque fluid being sealed up for use in a short flat tube. The estimations were made in a flat graduated test-tube of a determined diameter, three-eights of an inch. A definite quantity of the urine (20 or 40 minims) was poured in, and the albumen was precipitated by either a ferrocyanic or a mercuric test-paper The opacity almost at once produced was compared with that of the standard by placing immediately behind the tubes printed lines; when it overstepped it, the urine must be diluted to the required degree. The number of times the volume of the urine had been increased by dilution represented so many decimals per cent. of albumen: for example, 20 minims of urine requiring to be diluted to 180 minims contained .9 per cent. Dr. Oliver showed, on taking the twenty-four hours' urine, how readily by this method the total amount of albumen daily discharged could be expressed in grains; it was only necessary to multiply the percentage by 4.36 (or roughly 4½), and the number of ounces of urine: for example, .6 per cent. × 4.36 = 2.6 gr. to the ounce, × 50 oz. = 130 grs., total loss of albumen in twenty-four hours. In this way, he believed that accurate data could be provided without loss of time for comparing the effects of treatment on the amount of albumen eliminated; and he suggested that quantitative analysis of albumen might become useful in diagnosing the forms of renal disease. Dr. S. C. Smith remarked that the mercuric iodide papers would not always detect albumen in urine, even when there was a large quantity of albumen present. Dr. Oliver, in replying, explained that the mercuric iodide was so rapid a reagent that, when the quantity of albumen was great, it coagulated in the substance of the paper; and there certainly was a possibility of error from this cause with the reagent.—*British Medical Journal*, May 3, 1884.

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**On a "Rennet" Ferment Contained in the Seeds of Withenia Coagulans.**—Prof. Michael Foster communicates to the Royal Society of Soudan the experiments made by Sheridan Lee on this subject (Proceedings). It seems that in India, cheese made with animal rennet is unsalable among the natives, so attempts have been made to discover a suitable vegetable rennet to meet this objection. This has been found in the fruit of puneeria, now withenia coagulans, a shrub common in Afghanistan and Northern India, an aqueous extract of the seed capsules of which does somewhat rapidly coagulate milk.

The material supplied to Mr. Lee consisted of an agglomerated dry mass of seed-capsules and stalk fragments. On proper preparation the seeds, enveloped in a coating of resinous material, the dried juice of the capsules, could be separated from the rest. It was then found that a five-per-cent. sodic chloride solution was the most efficient in the extraction of the active principle from the seeds, which is soluble in glycerine, and possesses strong coagulating powers even in small amounts. Alcohol precipitates the ferment body from its solutions; and the precipitate, after washing with alcohol, may be dissolved up again without having lost its coagulating powers. The coagulation is not due to the formation of acid by the ferment. If some of the active extract be made neutral or alkaline and added to the neutral milk, a normal clot is formed, and the reaction of the clot remains neutral or faintly alkaline. The clot formed by the action of the alkaline is a true clot, resembling in appearance and properties that formed by animal rennet, and is not a mere precipitate.

A deep brown coloring matter pertaining to the seeds was with difficulty got rid of. When 40 grms. (℥ x) of the prepared seeds were treated with 150 cub. centims. (℥ jvss) of five-per-cent. sodic chloride solution, they gave an extract of which 0.25 cub. centim. (gr jv) clotted 20 cub. centims. (℥ v) of milk in 25 minutes, and 0.1 cub. centim. (gr jss) clotted a similar portion of milk in one hour; the curd formed being quite white.

A portion of the extract given to a professional cheese-maker, was used satisfactorily as a substitute for animal rennet in the preparation of

cheese.—*Journal of the American Medical Association*, March 29, 1884.

**Picric Acid as a Test for Albumen.**—In the Journal of January 5th (p. 10) there appeared a brief abstract from the Maryland Medical Journal, to the effect that Drs. Cook and Watkins had found that the urine of patients taking cinchonidia "gives the same reaction, with picric acid, as if they had albuminuria." If this is really the conclusion at which these observers have arrived, they must be unaware of the facts mentioned in my lecture, published in the Journal, December 8th, 1883 (p. 1,106), that most of the vegetable alkaloids, such as morphia, atropine, etc., are precipitated by picric acid, and by the potassio-mercuric iodide; but quinine is the only one which is likely to be taken in sufficient quantity to render the urine opalescent with either of these tests, and then the complete clearance by heat at once distinguishes it from an albuminous precipitate." One of my pupils, a healthy young man, volunteered to swallow ten grains of sulphate of cinchonidia in water. The urine passed two hours afterwards was rendered opaque and milky by picric acid, but the transparency was completely restored by boiling, which is the exact converse of what happens when albuminous urine, which has been rendered opaque by picric acid, is exposed to heat. I repeat here a statement which I made in the lecture before referred to: "There is no known substance occurring in either normal or abnormal urine, except albumen, which gives a precipitate with picric acid insoluble by the subsequent application of heat."

The statement of the American observers that "the urine of patients taking cinchonidia gives the same reaction with picric acid as if they had albuminuria," is not less misleading and absurd than would be the assertion that "the urine of patients taking alkalies, or the alkaline salts with vegetable acids, *e. g.*, citrate or tartrate of potash, gives the same reaction with heat as if they had albuminuria," such an assertion implying ignorance of the fact that the turbidity produced by boiling neutral, or alkaline urine, is due to a deposit of phosphates, which is distinguished from one of albumen by its ready solubility on the addition of a minute quantity of acid, whether vegetable or mineral.—George Johnson, M D., F. R S., in *The British Medical Journal*, January 19. 1884.

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**Condurango.**—This bark, which, it will be remembered, was introduced from America in 1871 as a cure for cancer, and was generally discredited, has not gone quite out of repute The Swiss Wochenschrift für Pharmacie states that Dr. A. Hoffmann, of Basle, has made a long series of observations of cancer, having had, since 1871, under his care 132 cases. Of these, during the last three years, he has treated twenty cases with condurango, and four are still under treatment. Of the 108 treated without condurango, he says 9.1 per cent improved, 25 per cent. obtained no benefit, and 64.8 per cent. died. Of those treated with condurango 40 per cent. improved, 10 per cent. did not improve, and 50 per cent have died. He considers that condurango has not only an influence in reducing the pain, but that it improves the appetite, the digestive powers, and the general condition.

Dr. Hoffman recommends the condurango of Ecuador in preference to that of Venezeula. The latter yields preparations of hot peppery taste, which in some cases can hardly be borne by the patients.

The preparations employed by the author are the following: (1) A decoction made by macerating 15 grammes of condurango in 360 grammes of water for twelve hours, and then boiling down to half its weight. Of this a teaspoonful is given twice or three times daily. (2) A simple decoction, 15 : 180. (3) The fluid extract. (4) A tincture, 1:5. (5) But, in preference to all, a wine prepared according to the directions of Professor Immermann, as follows: 2½ kilos of condurango, coarsely powdered, are macerated for two days in a stone vessel with 10 litres of cold water, the fluid poured off, a similar quantity of cold water again poured over the residue, boiled for an hour over an open fire, cooled and strained, and the liquor added to the previous infusion. The residue is then macerated for two days with 5 litres of rectified spirit, and pressed. The expressed tincture is filtered, and the spirit dissolved off in a steam-bath. The residue is then dissolved in the aqueous infusions, and the whole rapidly evaporated to an extract consistence, which is then dissolved in 2½ litres of Malaga wine, set aside, and finally filtered. This wine has a pleasant bitter taste and is generally liked by the patients.—*The Chemist and Druggist*, April 15, 1884.

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**Stigmata Maidis in the Treatment of Diseases of the Heart.**—Dr. Henri Dupont has made use of this drug in cardiac affections, and has recorded his impressions of its action as compared with that of digitalis and convallaria ("Union médicale," February 21, 1884). In the trials he has made of it during a period of three years he has been struck with three facts: diuresis, slowing of the heart's action, with improved rhythm, and the tolerance of the drug shown by the system. The diuretic action is almost always manifested at the very first, and goes on increasing up to the thirteenth or fourteenth day; and it is in cardiac affections, with œdema of the lower limbs or general dropsy, that the beneficial action of the agent is the most prompt and the most evident. While the dropsy diminishes and often disappears, the arterial tension increases and the venous tension is reduced concurrently, the general condition becomes decidedly improved, and in particular, the author mentions a subjective feeling of calmness and *bien-être*, except where there is pronounced dyspnœa. The latter symptom he has never known to be relieved. In hypertrophy, however, and stenosis, the result has almost invariably been excellent. On the whole, the author thinks the stigmata act more powerfully than digitalis, and with about the same energy as convallaria, but that they are to be preferred on account of their not producing the unpleasant effects that sometimes follow the use of either of the latter drugs. The extract is the preparation always employed by Dr. Dupont, never more than three grammes a day being given. The strength of the extract is not stated. He is guided as to the dose by the amount of diuresis—only enough need be given to produce free action of the kidneys.—*New York Med. Jour.*, Mar. 22, 1884.

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**A New Antagonist to Alcohol.**—The kola nut of Guinea, or gara nut of Soudan, the fruit of the sterculia acuminata, cola acuminata of Daniell, has recently assumed a new importance by its remarkable property of antagonizing the effects of alcohol. It has long been known that the kola nut contains caffeine, to which may be attributed the lessened desire for sleep and sense of physical well-being caused by the consumption of it; for which reasons it has long been extensively and highly valued throughout a large portion of Africa. Unlike the coffee bean, however, it contains no tannin. It has recently been discovered that when chewed, it antagonizes the effects of alcohol, and constant use of it said to dissipate the desire, even in old drinkers. Whether it is superior to the aromatic spirits of ammonia for the treatment of an "acute drunk" is not yet definitely known. The nuts are much more available for constant use, however, than any liquid, and if the claims put forward be true, the "diner-out," by taking a few of them along with him, need not be disturbed by thoughts of the next morning's headache.—*The Medical Record*, March 29, 1884.

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